UNIVERSITY of SANTA CLARA

CATALOGUE FOR THE
EIGHTIETH YEAR
1930-1931

ANNOUNCEMENTS 1931-1932

University of Santa Clara

COLLEGE OF LIBERAL ARTS

Courses in Letters, Philosophy, Science, and Education leading to the Bachelor's degree.

GRADUATE DEPARTMENT

Courses leading to the higher degrees.

COLLEGE OF BUSINESS ADMINISTRATION

A four year course leading to the degree of Bachelor of Commercial Science.

COLLEGE OF ENGINEERING

Courses in Chemical, Civil, Mechanical, and Electrical Engineering leading to Professional Degrees.

COLLEGE OF LAW

A three-year course leading to the degree of Bachelor of Laws, following the pre-legal work in the College of Liberal Arts.

PRE-MEDICAL DEPARTMENT

A standard three-year course preparatory to Medicine meeting the requirements of the American Medical Association.

PRE-DENTAL DEPARTMENT

A two-year course preparatory to Dentistry.

THE OBSERVATORY

Astronomical, Meteorological and Seismological Observatory.

For Catalogue of the University

Address

THE REGISTRAR

University of Santa Clara, Santa Clara, California

University of Santa Clara

CATALOGUE

FOR THE EIGHTIETH YEAR

1930-1931

ANNOUNCEMENTS 1931-1932

To mould men after the model of the Man-God, and thus to form them to serve their fellowmen, their country and their God; this is the ideal and the purpose of the University of Santa Clara.

PUBLISHED BY THE UNIVERSITY OF SANTA CLARA
SANTA CLARA, CALIFORNIA
MAY, 1931

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The Corporate Title of the University is

THE PRESIDENT AND BOARD OF TRUSTEES OF SANTA CLARA COLLEGE

BOARD OF TRUSTEES

CORNELIUS JOSEPH McCOY
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JOHN JOSEPH HAYES
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EXECUTIVE BOARD

THE PRESIDENT THE SECRETARY

CLARENCE C. COOLIDGE, Esq.

CONSULTING ATTORNEY

CLARENCE C. COOLIDGE, Esq.

*Deceased Dec. 8th, 1930.

CALENDAR

First Semester—1931

August 14-17	Registration of Lower Division students in all departments.
Aug. 14 & 15, Fri. & Sat.	Registration of Lower Division non-resident students.
Aug. 15, Saturday, P. M.	Dormitories and dining halls open to Lower Division resident students.
Aug. 16 & 17, Sun. & Mon.	Registration of Lower Division resident students.
Aug. 18, Tuesday, 8 A. M.	Instruction begins for Lower Division.
August 22, Saturday	Registration of Juniors in all departments.
A. M.	Examinations to remove conditions.
P. M.	Dormitories and dining halls open to Upper Division resident students.
August 23, Sunday	Registration of Seniors in all departments.
Aug. 24, Monday, 8 A. M.	Instruction begins for Upper Division.
August 27, Thursday	Mass of the Holy Ghost.
August 30, Sunday	Registration closes in all departments.
September 1, Tuesday	Students' Retreat begins at 6:30 p. m.
September 5, Saturday	Students' Retreat ends.
September 7, Monday	Labor Day; a holiday.
November 2, Monday	Last day to submit subjects for Graduation Theses and Sophomore Essays.
November 10, Tuesday	Owl Oratorical Contest.
November 12, Thursday	Requiem Mass for deceased members of Faculty and Alumni.
November 24, Tuesday	Y. M. I. Sullivan Memorial Intercollegiate Oratorical Contest, San Francisco.
November 26, Thursday	Thanksgiving Day; a holiday.
December 1, Tuesday	Dramatic Art Contest.
December 8, Tuesday	Feast of the Immaculate Conception; a holiday.
December 18, Friday	Christmas recess begins at 4:00 P. M.

Second Semester—1932

January 3, Sunday	Registration of Lower Division students in all departments.
January 4, Monday	Registration of Upper Division students in all departments.
Jan. 5, Tuesday, 8:00 A. M.	Instruction begins in all departments.
January 18, Monday	Registration closes in all departments.
January 31, Saturday	Examinations to remove conditions.
March 1, Tuesday	Last day to submit Graduation Theses and Sophomore Essays.
March 22, Tuesday	Essays for various Prize Contests due.
March 23, Wednesday	Easter recess begins at 4:00 P. M.
March 29, Tuesday	Easter recess ends at 6:00 P. M.
April 19, Tuesday	Ryland Debate.
April 29, Friday	Written examinations for Seniors begin, followed by orals.
May 5, Thursday	Ascension Day; a holiday.
May 7, Saturday	Baccalaureate Mass and Eighty-first Annual Commencement.
May 9, Monday	General examinations begin.

OFFICERS OF ADMINISTRATION AND INSTRUCTION

CORNELIUS JOSEPH McCOY, S. J.
President

JOSEPH RANDALL CROWLEY, S. J.
Vice-President, Director of Discipline

WILLIAM CHARLES GIANERA, S. J.
Dean of the Faculties, Director of Studies, Registrar

CLARENCE C. COOLIDGE, B. S., A. B., J. D.
Dean of the College of Law
Professor of Law

GEORGE LEONARD SULLIVAN, B. S., M. E., Ph. D.
Dean of the College of Engineering
Mechanical-Electrical Engineering

EDWARD JOHN KELLY, B. S., C. P. A.
Dean of the College of Business Administration
Accounting, Mathematics of Investment

HUGH COLUMBUS DONAVON, S. J.
Dean of Men
Ethics

EDWARD ALEXANDER AMARAL, M. D.
Visiting Physician

HUNTER SHERMAN ARMSTRONG, A. B., LL. B., LL. D.
Professor of Law

EUGENE MICHAEL BACIGALUPI, S. J., Ph. D.
Physics

DANIEL BASSETT, S. J.
Eloquence, English, Latin (Jesuit Junior College)

JAMES MARIUS BECCHETTI, A. B., LL. B.
Commercial Law

EDWARD RICHARD BOLAND, S. J.
History, Religion

JOHN BERNARD BROLAN, S. J.
Philosophy, History, Religion

JOHN MAY BURNETT, A. B., LL. B.
Professor of Law

RAYMOND BUTLER, S. J.
Greek, History, Pedagogy (Jesuit Junior College)

LLEWELLYN BEECHER CAIN, B. Mus.
Director of Glee Club

ANGELO LAWRENCE CAPELLI, B. Mus.
Director of Band and Orchestra

LAWRENCE HARVEY COOK, A. M.
Organic Chemistry

CAMILLO d'ABRUZZO, Brev. Sup. (Sorbonne, Paris)
Italian

CORNELIUS FRANCIS DEENEY, S. J., Ph. D.
Political and Social Science

COL. JOSEPH L. DONOVAN, U. S. A. (retired)
Dean Emeritus, College of Engineering
Special Lecturer in Civil Engineering

JOHN FRANCIS DOUGHERTY, S. J.
Chemistry

HARLAN HEBE DYKES, A. B., J. D.
Director of Physical Education, Basketball
Professor of Law

EDMUND CLARENCE FLYNN, B. S. in C. E., M. S.
Civil Engineering

JOSEPH MATTHEW GEORGEN, S. J.
Superintendent of Grounds and Buildings

FREDERICK C. GERLACH, B. S., M. S., M. D., LL. D.
Visiting Physician and Surgeon

JOHN FRANCIS GIAMBASTIANI, S. J.
Spanish, Philosophy, Journalism

GEORGE ALDEN GILBERT, S. J.
Mathematics, Religion, English

MARTIN C. GLAVINA, A. M.
German

JOHN JOSEPH HAYES, S. J.
Secretary and Treasurer

JAMES BERNARD HENRY, S. J.
Engineering Mathematics, Descriptive Geometry, Seismology

*BERNARD ROSECRANS HUBBARD, S. J.
Geology

ALFRED WILLIAM JOHNSON, S. J.
English, Latin

EDWARD P. KENNEY, S. J.
Vice-President, Jesuit Junior College

ROBERT DANIEL LANE, B. S.
Embryology, Zoology

HENRI LECAT, Brev. Sup. (Paris)
French

WILLIAM MARCHINTON, S. J.
English, Religion

RALPH HENRY MARTIN
Assistant to the Dean of the Faculties
Spanish

FENTON JOHN McKENNA, Ph. B., LL. B.
Dramatics, Public Speaking

WILLIAM FRANCIS McNALLY, S. J.
English, Religion

*On leave of absence during the year 1930-31.

THOMAS A. MEAGHER, S. J.
Asceticism, Religion (Jesuit Junior College)

EDWARD PRESTON MURPHY, A. B., J. D.
Professor of Law

ALBERT J. NEWLIN, B. S., J. D.
Associate in Meteorology and Seismology

JOSEPH PERRON, S. J.
Chaplain, Jesuit Junior College

ERNEST FREDERICK PETERSON, B. S., M. S., E. E.
Electrical Engineering

*JEROME SIXTUS RICARD, S. J.
Astronomy, Meteorology

EDGAR CHARLES SCHOTT, B. S.
Mathematics, Descriptive Geometry

FRANCIS J. SEELIGER, S. J.
Greek, Latin (Jesuit Junior College)

DONALD SHAM, M. A.
Finance, Marketing, Economics

LAWRENCE TIMOTHY SHAW, B. S.
Assistant in Football

FRANCIS LOUIS SHEERIN. S. J., S. T. D.
Philosophy, Religion

EDWARD SHIPSEY, S. J.
Education, English

JOHN G. SHOTT, A. M.
Economic Geography, Statistics, Foreign Trade

LEO S. SIMPSON, S. J.
Dean, Jesuit Junior College
Greek, Latin, Pedagogy

MAURICE JOSEPH SMITH, LL. B.
Director of Football
Professor of Law

CHARLES DANIEL SOUTH, A. M., Litt. D.
Assistant Librarian

JOHN A. WADDELL, A. M.
Professor Emeritus

CHARLES J. WALSH, S. J.
Eloquence, English, Latin (Jesuit Junior College)

ROBERT WILLIAM WARD, B. S.
Assistant in Chemistry

ALVIN JOSEPH WOLF, A. M.
English

HENRY WOODS, S. J., Ph. D.
Emeritus Professor of Ethics, Librarian

*Deceased December 8, 1930

FACULTY COMMITTEES

ATTENDANCE—The Director of Studies and the Director of Discipline.

CREDENTIALS AND REGISTRATION—The Director of Studies, and Deans of the various Colleges, and the Director of Discipline.

DISCIPLINE—The Director of Discipline and the Director of Studies.

DRAMATICS AND PUBLIC EXERCISES—The President, the Director of Studies, the Director of Discipline, and the Director of Dramatics.

EXAMINATIONS—The President, the Director of Studies, and the Professors of the various courses.

POST-GRADUATE STUDIES—The President, the Director of Studies and the Professors of the subjects in which the Post-Graduate work is taken.

SCHOLARSHIP AND STANDING—The Director of Studies and the Deans of the several Colleges.

STUDENT ORGANIZATIONS—The Director of Studies, the Director of Discipline and the Director of each organization.

STUDENT PUBLICATIONS—The Director of Studies, the Director of Discipline and the Faculty Moderator.

THESES—The Director of Studies and the Professors of the Upper Division Courses.

ATHLETICS—**Board of Athletic Control.** The President, a member of the faculty chosen by the President, and three members of the Alumni Association also chosen by the President.

Advisory Board of Athletics. Nine members of the Alumni Association.

Auxiliary Athletic Board. A member of the faculty and three members of the Associated Students appointed by the President.

GENERAL INFORMATION

LOCATION

The University of Santa Clara, conducted by the Jesuit Fathers, is situated at Santa Clara on the site of the old Mission, in the southern part of the San Francisco metropolitan district and immediately adjacent to San Jose. Frequent railroad, street-car and bus service provides easy access to the various Bay cities, and direct connections to all parts of California and the west.

The valley of Santa Clara is famous throughout the world for the beauty of its scenery, the salubrity of its climate, and the excellence of its fruits. The climate is mild and equable both in summer and winter, and on that account singularly favorable for persistent study and research as well as for the maximum of agreeable out-of-doors recreation which such work makes necessary.

HISTORY

Mission Santa Clara. On January 12, 1777, two Franciscan Padres, de la Pena and Murguia, planted the Mission Cross and laid the foundations of Mission Santa Clara on the banks of the Guadalupe, about a mile and a half from the University grounds. Two years later a flood destroyed both church and monastery, and the Padres in consequence removed the Mission to the second site, two blocks from the present church. There, on November 9, 1781, they laid the foundation of a large adobe church and mission buildings. Three years later, on May 15, 1784, the new church was dedicated by the Venerable Padre Serra, then Padre Presidente of the Missions of California.

Owing to damage by earthquakes in 1812 and 1818 the Padres were forced to build anew and this time selected the site of the present Mission. There, on August 11, 1822, a still larger church was dedicated. With the passing of time the original church was largely rebuilt, though the chancel and the interior arrangements remained substantially as originally constructed. In October, 1926, the Mission was destroyed by fire and rebuilt in 1927, along the lines of the original structure. This new Mission was dedicated in 1928. The restoration of the Mission was made possible by the generosity of friends in the Santa Clara Valley as well as friends and Alumni of the University throughout the State of California.

In 1836 Mission Santa Clara was secularized and passed from the hands of the devoted Padres into those of politicians, who robbed the Mission of her lands and oppressed or drove away her children. When Rt. Rev. Joseph Sadoc Alemany, O. P., arrived as Bishop of

the Diocese of San Francisco in 1850, he found only one Franciscan in charge of the Mission, which had been restored by the American government, though in a sadly reduced form.

Santa Clara College. Desiring to save the remnants of the Mission, and also to start a college to meet the growing need of the times, the Bishop invited the Society of Jesus to Santa Clara. The invitation was accepted, and accordingly on March 19, 1851, Father John Nobili laid the foundation of Santa Clara College.

He adapted the old adobe buildings to the requirements of a college. On April 28, 1855, the institution was chartered a University and continued to be known as Santa Clara College until 1912. It is the oldest institution of higher learning in the west. In 1857 the degree of A. B. was conferred on Thomas I. Bergin, the first to receive that degree from any California college.

During the subsequent years the College grew in influence and attendance. Several large new buildings were added, and for many years Santa Clara College, in both equipment and scholastic standing, ranked as the leading educational institution in the west. In its sixty years of existence as a college over seven thousand students were matriculated.

The University. In 1907 lectures were commenced with a view of preparing students to enter upon the professional courses in law, medicine and engineering. In 1911, the pre-medical course was established and the law school begun. Realizing, therefore, that the College was practically doing the work of a University, the President, Father James P. Morrissey, S. J., and the Board of Trustees adopted officially the name of "The University of Santa Clara," this decision going into effect on April 29, 1912.

In the summer of 1912, engineers of high standing were engaged to carry on the courses in engineering, and in the next summer a thoroughly equipped laboratory for engineering was prepared. In the same year the amount of work required of law students was increased and the classes in Law were thenceforth held at night.

The outbreak of the War suspended the plans for expansion and it was not until after its close that they were resumed. In 1923 an extensive building program was commenced, with a view to provide an adequate material basis for the University, and during the following years there has been added a group of new buildings, including Alumni Science Hall, 1923; Montgomery Laboratories, Seifert Gymnasium, Kenna Hall and the Service Building, 1924; Donohoe Infirmary, 1925; the remodeling of the Auditorium in 1926; the Ricard Memorial Observatory, the Seismological and Meteorological Stations, the New Mission Church in 1928, Nobili Hall in 1930, and the University Library, under construction, in 1931.

Accompanying the Building Program there has come a corresponding growth in attendance and scholastic work. In 1923 the Pre-Medical course was restored, and a four year College of Business Administration added. In 1925 the College of Law was increased to four years; and the Preparatory Department transferred to a separate campus on the former property of the College of the

Pacific at College Park, San Jose. In 1926 the University celebrated its Diamond Jubilee and with enlarged facilities and equipment has entered upon a program of greater service to Church and state. In August, 1929, plans were formulated whereby the standing of the College of Law would be greatly increased. Since August, 1930, all classes in the College of Law previously held at night have been taught under the new plan as morning classes. This will eventually make this department of the University a full time three year day law college in accordance with the standards of the American Bar Association.

SYSTEM OF EDUCATION

The Jesuit system of education aims at developing side by side the moral and intellectual faculties of the student, at sending forth to the world men of sound judgment, of acute and rounded intellect, of upright and manly conscience. And since men are not made better citizens by the mere acquisition of knowledge, without a guiding and controlling force, the principal faculties to be developed are the moral faculties. Moreover, morality is to be taught continuously. It must be the underlying base, the vital force supporting and animating the whole organic structure of education. It must be the atmosphere the student breathes. It must suffuse with its light all that he reads, illuminating what is noble and exposing what is base, giving to the true and false their relative light and shade.

Because of its conservative system of education, its solid philosophical system and the highly specialized training required of those who qualify as professors, the Universtiy of Santa Clara is particularly prepared to train leaders of men.

Though the Catholic Religion is the religion professed by the Faculty and by the larger number of the students, members of all religions are admitted provided they are willing, for the sake of order and uniformity, to conform respectfully to the religious observances of the University.

GROUNDS AND BUILDINGS

The Campus. The University occupies a well laid out campus of approximately fifteen acres facing the Alameda, on El Camino Real from San Francisco to Los Angeles—the site of the third Mission Santa Clara. The buildings are grouped in a series of quadrangles around the Mission church in accordance with the Campus Plan prepared by Mr. John J. Donovan, which provides for a continuation of the original Mission style.

Mission Santa Clara, built in 1822, and the Students' Chapel, built in 1887, were destroyed by fire on October 25, 1926. Through the generosity of Alumni and friends of the University, a new Mission Church, a replica of the original church, stands on the former site, the

heart and center of University activities. It will serve as the Students' Chapel and at the same time enshrine the priceless relics of the old Mission rescued from the fire by the heroic efforts of the Faculty and students.

Bergin Hall, built in 1912 to replace the old Fathers' Building destroyed by fire in 1909, is a gift to Alma Mater of her first graduate, Hon. Thomas I. Bergin, A. B. '57. It contains the administrative offices of the University, reception rooms, residences of the Fathers and Scholastics, and the Library.

O'Connor Hall, built in 1912, is the gift of Mr. and Mrs. Myles P. O'Connor. On the first floor are the class-rooms of the College of Liberal Arts and of the Institute of Law, and office of the Director of Discipline. The second and third floors contain private rooms for the upper class-men. In the basement are the co-operative bookstore, restaurant, and recreational facilities of the Associated Students, Practice Court of the College of Law, and the Paleontological Museum.

The Theatre, originally built in 1870 and completely reconstructed in 1926, is one of the largest theaters for amateur productions in the West, and has been the scene of such notable dramatic productions as the Passion Play and the Mission Play of Santa Clara.

Alumni Science Hall, built in 1924, is the gift of the Alumni of Santa Clara and contains offices, class-rooms, laboratories, and drawing rooms of the College of Engineering; the lecture rooms and laboratories of the Departments of Biology, Chemistry and Physics; and the electrical equipment service rooms.

Robert E. Kenna Hall, erected in 1924, is dedicated to Rev. Robert Emmet Kenna, S. J., student, professor and twice president of Santa Clara College. On the first floor are the offices, class-rooms, laboratories and library of the College of Business Administration; and class rooms for the lower division classes. The two upper floors contain private rooms for the lower division students.

Montgomery Laboratories, erected in 1924, are dedicated to John J. Montgomery, "Father of Aviation," one time Professor of Physics in the University. On the first floor are the forge, wood-working and pattern-making, materials testing, mechanical, and electrical laboratories of the College of Engineering, together with office and lockers for laboratory classes. In 1930 a second story was added, in which are contained drawing and lecture rooms for Engineering students.

Seifert Gymnasium, erected in 1924, is a bequest of the late Dr. George W. Seifert, B. S. '79. It houses the plunge (40x100x10), the basketball court (65x100), locker rooms for Varsity and class teams, music rooms and students' lounging room, and is the center of social life at the University.

The Service Building, erected in 1924, houses the laundry, power and heating plant, and service rooms. The second floor provides a dormitory for employees.

Donohoe Infirmary, erected in 1925, is the gift of Miss Katherine Donohoe in memory of her father and mother, James and Rose Donohoe. It is a complete small hospital, with private rooms and ward, diet kitchen, dispensary, operating room, chapel, and offices for the infirmarian and visiting physician.

The Ricard Memorial Observatory is the gift of the Knights of Columbus of California to the "Padre of the Rains." This building, with its three domes, houses the telescopes, the spectroheliograph and other instruments. An underground passageway connects the vault of the Seismic Station to the Observatory. The new Seismic Station contains the old 80Kg Wiechert Horizontal and Vertical Seismographs, three new Galitzin Seismographs of the long range type and the two new Wood-Anderson Seismographs, especially designed for local quakes. A specially constructed clock niche in the vault will contain a "Shortt Synchronome Clock" and will be kept at a constant temperature by means of a highly sensitive thermostatic control. The Observatory likewise houses the other necessities of a Station of this type, such as Battery rooms, photographic dark-rooms and offices where records will be kept for study and reference.

Nobili Hall, erected in 1930, is dedicated to Fr. John Nobili, S. J., the first President of the University. On the first floor are the refectories for the Fathers, faculty, students, guests and employees; kitchens and service rooms. The second floor contains rooms for the lay professors as well as for the students. The third and fourth floors have rooms reserved entirely for students.

The Library. Construction of the new University Library commenced on March 12, 1931. The first floor will have private study rooms for the Faculty, departmental reading rooms, offices for the Librarians, students' reading room, stack room and cloak room. In the stack room provision is made for 100,000 volumes, allowing for expansion. The main reading room affords simultaneous accommodations for nearly two hundred readers. The second floor over the offices is destined for the exclusive use of the Law Library and reading rooms for students in the College of Law.

Athletic Field. Adjacent to the campus is the Athletic Field, with football and baseball fields and club house. Adjoining the Gymnasium are tennis and handball courts.

LABORATORIES

The laboratories of the departments of Biology, Chemistry and Physics are located on the first and third floors of the Alumni Science Hall. They are completely equipped for lower division laboratory work and a limited amount of advanced work.

The laboratories of the College of Engineering are located in the Montgomery Laboratories and provide complete laboratory facilities for engineering courses.

The Astronomical, Seismological and Meteorological laboratories are located in the Observatory group.

ENDOWMENT AND NEW BUILDINGS

The growth in the number of students and the work of the University has made it imperative that adequate buildings and endowment be provided. For this, and in order that Santa Clara may widen its scope as an educational institution of recognized standing, funds are necessary. Santa Clara stands in imperative need of an endowment. The work the University has accomplished in the past is an earnest of what she will do when increased facilities are afforded her.

An endowment, however, implies a founder or founders and benefactors. During the past few years, many have helped the University and generous donations have been made. The new Mission Church, the Donohoe Infirmary, Bergin, O'Connor, and Alumni Science Halls, Seifert Gymnasium, Ricard Memorial Observatory and Nobili Hall are inspiring examples of such support.

But before other buildings, for which the plans of the University provide, may be added, further benefactions will be needed. Other institutions, even those state-aided and richly endowed, receive generous assistance in their work and hesitate not to ask for it. Santa Clara feels that generous friends are not lacking, though for the want of deeper thought on the matter, few realize the importance of Christian educational work, the immense sacrifice it entails, and the merit there is in co-operating and sharing with Christian educators in their work for God and country and the welfare of the young men of our generation.

The Jesuit Faculty of the University has given its life-services freely and gladly to the work. Those who would share with them in this great enterprise can do so most effectively by rendering material aid and contributing funds for the continuance and development of the work.

Nobili Hall, providing modern kitchens and dining halls, and additional living quarters for lay faculty and students, was long an urgent need. To construct this building, it was necessary to borrow a large sum from the banks. The present indebtedness of the University is slightly over $300,000.

FORM OF BEQUEST

I give and bequeath unto the President and the Board of Trustees of Santa Clara College, a corporation duly incorporated under the laws of the State of California, a sum of.....dollars.

SCHOLARSHIPS

Every year deserving young men of high character and aspirations, whose means do not permit their attending the University, appeal to the Faculty for assistance to obtain the education for

which their talents and vocations fit them. There is scarcely a university in the United States which is not provided with a fund for this purpose, and a relatively large per cent of successful college men spring from the class of assisted students. To contribute to such a purpose is clearly a noble benefaction. But this is especially so with regard to those who apply for help to the University of Santa Clara. They are as a rule young men of high standing, who understand the paramount value of an education in a university which aims at the highest intellectual development of the student, while devoting no less attention to the perfect development of his moral character. As a consequence, to assist them in attaining their desire is to aid picked young men whose future is more than ordinarily full of promise, and who are destined to exert a most powerful influence on those among whom their lives will be spent.

Through the generosity of friends of the University a few such scholarships have recently been established, but there is need for many additional scholarships, either through permanent endowment or by annual gifts.

STUDENT ORGANIZATIONS

College life must include the development of the social side of every student's character. Marked initiative and leadership in organized religious and social movements for the common welfare of his fellows, are qualities expected of college men generally. For this purpose the University student organizations and activities furnish splendid opportunity.

RELIGIOUS ACTIVITIES

As the first thought of the University is the encouragement of a sound religious life on the part of the student body, special attention is given to those sodalities and religious organizations sponsored by the Church, some of which have existed at Santa Clara for more than three quarters of a century.

Sodality of the Immaculate Conception. Its object is to promote in its members a special and filial devotion to the Immaculate Mother of God, to imitate her virtues, to encourage, both by word and example, an eminent purity of morals and a manly fidelity to the practice of religion.

The League of the Sacred Heart. The object of this Association is to foster in the students an earnest religious spirit, particularly a deep and tender love towards our Lord in the Sacrament of His Love, and a consequent reparation for the offenses committed against Him. To this end the First Friday Communion is zealously encouraged.

The Saint John Berchmans' Sanctuary Society. This society has as members those students who as a reward for good conduct and exact application to their studies have been allowed to serve at Mass and assist at the other services in the College chapel.

Holy Name Society. The purpose of this society is the public manifestation of belief in the Divinity of our Lord Jesus Christ.

DRAMATICS

An exceptionally high standard of dramatics has been set at Santa Clara from the beginning. Earliest records show that classical productions were quite the accepted thing even in the fifties, nor

have traditions changed. In consequence of this students acquire a rare facility of expression and unusual ease in public appearances.

Each year a major dramatic production is staged, giving opportunity to a large proportion of the student body to participate. In the past these productions have included such notable performances as "The Mission Play of Santa Clara" and "The Light Eternal" by Martin V. Merle '06, and "The Passion Play of Santa Clara," and "The Weaver of Tarsus" by Clay M. Greene '69.

DEBATING

The standard of debating is on a par with that of dramatics. In addition to the various debating societies inter-collegiate debates are arranged each year with representative colleges and universities.

The Literary Congress held its first meeting on February 22, 1857, and has since then furnished its members an opportunity for exercise in debating and other forms of public speaking. It consists of two Houses, the Philalethic Senate and the House of Philhistorians.

The Stephen M. White Debating Society, established October 14, 1922, has for its object the fostering of debating and public speaking among Freshmen in the College of Liberal Arts.

MUSIC

The University Band and Orchestra furnish their members with the opportunity for ensemble playing at the public exercises of the University.

The University Choir and Glee Club furnish vocal music for Chapel services and the public exercises of the University.

ATHLETICS

Athletics at Santa Clara are under faculty control through the Board of Athletic Control and the Faculty Moderator, by whom arrangements for inter-collegiate and intra-mural contests are made.

In direct charge of Athletics and Physical Training is the Director of Physical Education, who is assisted by professional coaches in the various major activities.

Block S. C. Society. Members of the University teams who have secured the University letter are organized into the Block S. C. Society in recognition of their athletic ability and for the encouragement of a high standard of athletic conduct.

The Athletic Managers Association is composed of volunteers from each class who co-operate with the management in the conduct of games and the care of equipment.

ALUMNI ASSOCIATION

The object of this associtions is to strengthen and perpetuate college friendships, to preserve in former students a warm regard for Alma Mater and a lively memory of the substantial benefits she has bestowed, to cherish and advance her interests, to maintain her honor and sustain her reputation by manly and honorable conduct. Officers of the Association for 1930 are:

Charles H. Graham, A. B. '98. President
Louis O. Normandin, A. B. '03, Vice-President
William Knightly, '92, Vice-President
Thomas J. Riordan, A. M. '12, LL. B. '16, Vice-President
Danilo Tadich, A. B. '11, Secretary.
John T. Irilarry, A. B. '11, Treasurer

PUBLICATIONS

The "Santa Clara." The "Santa Clara" is the official weekly newspaper of the University. The aim of The Santa Clara is: To publish the news of the University, to aid in constructive work, and to afford the students of Journalism an opportunity for actual practice in newspaper editing, managing and make-up.

The "Redwood." The "Redwood" is the University annual published by the students to serve as a medium for literary work of more than passing merit, as a record of University activities, and as an expression of the student life of the University.

STUDENT CONGRESS OF THE UNIVERSITY

The Student Congress of the University is the student body organized for the encouragement of student activities, particularly Atnletics, and such other work as may be recommended by the Faculty.

DEPARTMENTAL CLUBS

Each department of the University has its own organization for the study of technical problems and for the encouragement of social life among the students of the department.

The Engineering Society. This is an organization made up of students in the College of Engineering with the object of familiarizing them with the conduct of meetings of public bodies and the acquisition of ease in public speaking. Lectures to the engineering students are given before this body.

The Business Administration Association. This is an organization of students in the College of Business Administration for the study of business problems and for the encouragement of social activities among the students of the College. Frequent lectures are given before the Association by business men of prominence.

Mendel Club. This is an association of students in the Pre-Medical Department for the study of scientific subjects and the encouragement of such activities as are of particular interest to the students of this department.

Legal Fraternity. This is an organization of students in the College of Law for the discussion of legal subjects, for the encouragement of social activities among the students of Law, and for the upbuilding of the Law work of the University.

The Arts Society. This organization is made up of students of the College of Liberal Arts whose object is to create and foster literary talent among the students and to preserve the classical traditions for which the University has been noted for more than seventy-five years.

EXPENSES

Resident Students

Board, Lodging and Tuition, per semester	$350.00
Deposit for Laundry, per semester	20.00
Room Deposit	10.00
Professional Medical Fee, per semester	5.00

Non-Resident Students

Tuition, per semester	125.00

For All Students

Matriculation Fee, paid at entrance	10.00
Athletic Fee, per semester	2.50
"Santa Clara", per semester	1.00
Student Activity Fee, per semester	1.50
Gymnasium Fee, per semester	5.00
Library Fee, per semester	5.00
Deposit for Books, per semester:	
Law Students	35.00
Engineering Students	30.00
Other Students	20.00

Special Charges

For registration on the first day after the opening of semester	2.50
For each day thereafter	1.00
For each examination taken out of time or to remove a condition	2.00
For course in Subject "A," each time	5.00
For each syllabus (synopsis of semester's work in any subject furnished by professor)	2.00
For each copy of the student's record other than the first	2.00
Laboratory Fees, per semester:	
Physics, Inorganic Chemistry, Biology 1, 2, 11, 12, each course	12.50
Pre-Medical Chemistry, Biology 3, 4, Histology, Bacteriology, each course	15.00
Engineering Geology, lecture and laboratory fees	15.00
Geology, lecture course only	2.50
Engineering, Freshman and Sophomore, shop or field	10.00
Engineering, Junior and Senior	25.00
Additional fee in all laboratories to cover breakage, etc.	5.00
Graduation Diplomas and Certificates	10.00

Pocket Money and Incidentals

The amount of pocket money and money for incidentals is left entirely to parents and guardians. The University prefers that parents deal directly with the students. Should, however, parents or guardians wish the Treasurer of the University to look after these matters, they must deposit a sufficient amount with him and instruct him how the money is to be used. The University does not advance money for these purposes.

Infirmary Charges

Charges for the ordinary attendance of the University Physician, Nurse and attendants are provided for by the Professional Medical Fee. Medicines are charged at cost prices. For a room in the Infirmary, a dollar a day is charged.

Payments

All charges must be paid half-yearly in advance. Remittances should be made in the name of the University of Santa Clara. Deferred payments of bills or reductions can be sanctioned only by the President. For such a concession a fee of $1.00 per month will be charged for each $200.00 or fraction thereof remaining unpaid. If payment is deferred without a satisfactory understanding with the President, the latter is directed by the Trustees to remove the student in question from the institution. Semester bills and unpaid balances are subject to sight draft ten days after the bill is rendered.

It is distinctly understood that no student is entitled to take any semester examination or receive any diploma or degree or be furnished with a record of his credits while any bills due the University remain unpaid.

When a student is withdrawn temporarily or permanently from the University the Vice-President must be directly informed, and money supplied for traveling expenses.

Refunds

There will be no refund made on Fees or Special Charges.

Refund on Tuition and Lodging will be pro rated quarterly according to the following plan. Anyone withdrawing prior to October, 15th or March 10th will have refunds made for the second half of the semester. No refund will be made for students withdrawing after the above dates. Refund on Board will be pro rated weekly from the beginning of the week following the date of withdrawal. No refund will be made for withdrawal after the first day of the last month of each semester.

Articles to be Brought

The articles which every student coming to reside at the University should bring with him are, more or less: blankets, bed-covers, sufficient wearing apparel and toilet articles. Clothing to be sent to the laundry should be marked distinctly with the student's name before registration.

Opportunities for Self Help

Owing to the scholastic requirements of the University and the limited opportunities for profitable employment, students entering the University should be provided with sufficient funds to meet the major portion of their expenses. For worthy students of high scholastic standing there are available, to those who have been in residence one year or more, a limited number of University positions whereby they can earn a part of their expenses. All students, whether employed or not, must meet the same standard.

SCHOLARSHIPS

The Alice Phelan Sullivan Memorial Scholarship

This perpetual scholarship for a resident student was founded in 1912 by the gift of $12,500 from "A Friend" in memory of Mrs. Alice Phelan Sullivan of San Francisco.

The Jesse W. Bryan Memorial Scholarship

This perpetual scholarship for a resident student was founded in 1913 by the gift of $12,500 by Mrs. Sarah A. Bryan in memory of her son, Mr. Jesse W. Bryan, a former student of Santa Clara.

LOAN FUNDS

The following loan funds are open to students of the University under such conditions as may be provided by the President:

Filipello-de Saisset Loan Fund. A loan fund of $1,500.00, established in 1925 by Mrs. E. A. Filipello and Miss Isabel de Saisset.

Alumni Loan Fund. A loan fund of $500.00, established in 1925 by the Alumni of the University.

PRIZES

Ordinary honors are awarded in all classes and in all subjects, to the students who are first and second in merit. Students whose yearly average is 85 per cent or over are given distinction. No student is eligible for a prize who has not been present for the whole year.

The following extraordinary prizes are open to competition on the dates announced in the University Calendar. The Faculty Committee of Scholarship and Standing reserves the right not to award any of these prizes in the absence of sufficient competition or a meritorious grade of scholarship. No one is eligible to compete a second time for a prize which he has already won, except after an interval of one year. Students who have not been in attendance for both semesters may not compete.

Nobili Medal. An annual prize of $60 founded by Joseph A. Donohoe, Esq., in honor of the First President of Santa Clara, Fr. John Nobili, S. J., to be given to the student in University Courses who shall be deemed first in morals, obedience and in application to study.

The Archbishop's Medal. An annual prize of $50, the gift of His Grace, Most Reverend Edward J. Hanna, D. D., Archbishop of

San Francisco, in memory of his illustrious predecessor, Most Rev. Patrick William Riordan, D. D., for the student who shall have competed most successfully in an examination in Christian Doctrine.

The Ryland Prizes. The Hon. Caius T. Ryland founded in 1897 an annual purse of $45.00, leaving its matter to the discretion of the Faculty. This the Faculty, after due consideration, assigned to the University Literary Congress, organized February 22, 1857, establishing the Ryland Debate to be held yearly between the two branches, the Senate and the House, and divided the purse into three prizes of $20.00, $15.00 and $10.00, respectively. By an agreement between these societies, each in turn selects the question to be debated, and to the other is granted the choice of the side it will defend.

The McCann Prize. Annual prize of $15.00 founded in honor of Daniel B. McCann, B. S. '84, to be given for the best short story.

The Redwood Prize. Annual prize of $25.00 founded in 1908 by the executive committee of "The Redwood," and given for the best essay on an historical subject.

The Owl Prize. An annual prize of $25.00 founded by the directors of the former College Magazine, "The Owl," to be given to the winner of the oratorical contest in the University.

The Orella Medal. An annual prize of $25.00, the gift of Dr. Firmin R. Orella, B. S. '89, to be given to the writer of the best paper on a scientific subject.

The Barchi Prizes. Annual purses of $15.00 and $10.00 given by Joseph M. Durney, Esq., for the best paper in such scientific subject as shall be determined by the faculty.

The William H. Leahy Prize. A gold watch, valued at $50.00, the gift of Mr. William H. Leahy, to be given to the winner of the Dramatic Art Contest.

The Donovan Prizes. The gift of Col. Joseph L. Donovan, U. S. A. (retired), Dean Emeritus of the College of Engineering, to be given as follows:

A cash prize of $25.00 for the best Senior Civil Engineering Thesis.

A cash prize of $15.00 for the best Junior Civil Engineering Design.

A cash prize of $20.00 for the best examination in Mathematics amongst the Sophomores and Freshmen of the College of Engineering.

Herman Budde Prize. A prize of $25.00 for the best essay on a selected subject.

The American Law Book Company Prize. A set of law books awarded to the student in the course of Legal Research having the highest average.

The Bancroft-Whitney Company Prize. A set of law books

awarded to the member of the Senior year having the highest average.

Two Silver Medals to be given to the following students who become most distinguished for good conduct and application to study.

1. The most distinguished **Resident** student.
2. The most distinguished **Non-Resident** student.

ADMISSION

General Statement

Application for admission, accompanied by scholastic credentials and testimonials of character, should be filed with the Registrar on or before August 1st. It is obligatory to submit on entrance official records from the school last previously attended, together with a transcript of record of all previous High School and College credentials. These credentials are to be forwarded directly by the proper officer of the school last attended and not through the student.

Testimonials

All applicants for admission must present satisfactory evidence of good moral character and a certificate of honorable dismissal from the school last attended. In case of an intermission of study immediately preceding registration the testimonial of good character should come from some responsible person who has been in a position to know the habits of the applicant during that time. Moreover, all applicants must at the time of registration submit the names of three persons to whom the Faculty may refer for further information regarding their character. The certificate of honorable dismissal from the school last attended should be accompanied by a letter from the principal certifying to the fitness of the candidate for successful college work.

No application for admission will be given consideration until the testimonials herein provided for have been offered.

Scholarship Credentials

Candidates for admission to any of the undergraduate courses of the University must qualify:

(a) For admission to Freshman standing:

1. By evidence of the completion of the regular four-year high school course of the Preparatory Department of this University or of a similar course in an approved high school, or
2. By passing an examination in subjects equivalent to fifteen standard high school units. The subjects to be presented must be arranged in advance with the University.

(b) For admission to the undergraduate course of his choice. The following are the prescribed entrance units for the respective degrees offered by the University in its various courses:

	A.B.	B.S.	Engrg.	Pre-Med.
English	3	3	3	3
Latin*	4			
Foreign Language*		2	2	2
Algebra	1	1	1½	1
Geometry	1	1	1½	1
History	2	2	1	2
Laboratory Science	1	1	1	1

*Students entering with only two units of Latin for the A. B. course or without two units of foreign language for the other courses, will be given an opportunity to make up these deficient units during the first two years of college. Both units must be in the same language.

It is strongly recommended that the unprescribed units for the A. B. or B. S. degrees be in Mathematics, Languages, preferably Latin or Sciences.

No credit is ordinarly allowed for physical education or music. One unit each may be accepted for commercial subjects, vocational subjects, and mechanical drawing.

Half units will be accepted only when presented in addition to integral units in the same subject or in half-year subjects which constitute a complete course in themselves, e. g., Solid Geometry. Any two of the biological sciences (Physiology, Botany, Zoology) may be combined into a continuous year's course equal to one unit.

The University reserves the right to require entrance examinations in the case of applicants whose certificates show grades below 80% in the prescribed units. Admission on school certificates is in all cases provisional and if, after admission, a student fails in any subject for which a school certificate was accepted, credit for that entrance subject may be cancelled.

A matriculation deficiency in a subject continued in the University in which the deficient student attains a grade of C (77-84), may be removed by the proper faculty, on the recommendation of the professor, with the approval of the Dean of the Faculties. Students, however, are cautioned not to assume in advance that this will be done.

Examination in Subject A

All lower division entrants in the colleges at Santa Clara must at the time of their first registration in the University, take an examination, known as the Examination in Subject A, designed to test their ability to write English without gross errors in spelling, grammar, diction, sentence-structure and punctuation.

The examination in Subject A will be given within two weeks after the opening of each semester. The papers submitted in the examination will be rated as either "passed" or "not passed." Any student who is not present at the examination in Subject A which he is required to take will be rated the same as those who have not passed the examination.

All students who do not pass in the examination in Subject A will be required to take, immediately after their failure, a course of instruction known as the Course in Subject A, without unit credit toward graduation. This course will be given each half year two hours a week for the semester, beginning one week after the examination.

Every student who is required to take the course in Subject A will be charged a fee of $5 and the charge will be repeated each time he takes the course.

Admission to Advanced Standing

Admission to advanced standing is by specific action of the Committee on Credentials and Registration, which will evaluate all credits presented and determine the rating of the candidate.

Students from other institutions of recognized collegiate rank, including Junior Colleges with well-established courses, may be admitted to such standing and upon such terms as the Committee shall deem equitable. Every such candidate is required besides the prescribed testimonials of character and scholarship, to present a catalogue of the institution in which he has studied, and a full statement, duly certified, of the subjects he has therein completed and of the subjects there presented for entrance. The University reserves the right to determine after a test of at least one semester, the amount of credit that the applicant may receive and meanwhile he shall have the status of an unclassified student.

Admission of Special Students

Candidates for admission as special students must be persons of mature age who desire to take up special work in one department or in one subject with its related branches. Such special students are not candidates for a degree, but they may become candidates by satisfying the requirements for a regular course. No one will be admitted directly from a secondary school to the status of a special student. Entrance examinations in the subjects of fundamental importance for the work proposed will be assigned in practically all cases. Registration as a special student is for one semester only and no one may register for less than ten hours. Re-registration will be refused if the student has not shown earnestness and definiteness of purpose or if his work has been unsatisfactory in whole or in part.

Admission of Foreign Students

Candidates for admission who come from foreign countries must present original and complete educational credentials, together with a catalogue giving full description of the courses. Provisional registration may be then given pending verification of the record and until the student concerned has successfully completed one semester's work of not less than twelve hours, when permanent matriculation may be given. Students from other than English-speaking countries must, in addition, possess sufficient knowledge of English to carry satisfactorily their class work.

RELIGIOUS TRAINING

To cultivate the heart, no less than to develop the intellectual and physical faculties of the student, is a duty kept constantly and sacredly in view.

As the Faculty of the University profess the Catholic religion, the exercises of religious worship are Catholic; but members of any religious denomination are received, provided they be willing, for the sake of order and uniformity, to conform respectfully to the religious observances of the University.

The University authorities are convinced that without religion there can be no education in the truest sense of the word, that is to say, no complete and harmonious development of the intellect and heart of man. They hold furthermore, that religious truth, being definite and certain, may be taught with as much exactness as language or any other branch. Accordingly the study of Christian Doctrine is required of every Catholic student, and two periods weekly are devoted to it in every class of every course. One unit per semester is allowed for this work.

STUDENTS' HEALTH SERVICE

The University exercises supervision over the health of students. Though a certain degree of sickness is inevitable among so many, its percentage is very slight. A physician is in daily attendance at the University without extra charge for minor cases. A certificate of health, either from the home or from the resident physician, is required of each student. Wholesome food, regular hours for rising and retiring, excellent climate and ample opportunity for outdoor recreation, all combine to improve the general health of the students who are registered at Santa Clara.

All students at the time of registration are required to undergo a physical examination under the supervision of the University physicians. Moreover, in accordance with the recommendation of the State Board of Health all students must present a certificate of vaccination or be vaccinated by the University physicians.

DISCIPLINE

Students, whose homes are not in the neighborhood, must reside within the University unless they are accompanied by their parents.

Students are not permitted to have books or other publications that have not been approved by the Vice-President.

The students' correspondence is subject to the inspection and control of the President.

To hold meetings or to form clubs or societies of any kind without the consent of the President, to gamble, to enter pool rooms, the habitual use of profane language, unbecoming conduct either within or without the precincts of the institution, the possession or distribution of indecent publications or pictures, intoxications, procuring or introducing intoxicating liquors, directly or indirectly, into the University, habitual idleness and violation of the rules of the University, obstinate refusal to submit to a punishment inflicted, absence from the University at night without leave, avowed principles of infidelity, express contempt or ridicule of religion, are offenses which expose the offenders to dismissal or suspension, as in the judgment of the Faculty shall be deemed necessary.

It is strictly forbidden for any student or group of students to haze any other student or subject him to any personal or physical indignity or treat him in such wise as may reasonably give offense.

No student will be permitted to leave the University on visits of any length, except during Christmas and Easter vacations, if such be the wishes of his parents or guardian. Parents are requested not to call their sons home at other times, except in cases of urgent necessity, as such interruptions, besides tending to prevent the acquisition

of habits of concentration and persevering work, are apt to result in poor scholarship and interfere seriously with the students' entire scholastic training.

Students who, having left the University for the summer vacation, Christmas holidays, or other recesses allowed by the President, fail to be present on the day for the re-opening of class, may, by the fact of absence, be excluded from the University, or at the discretion of the Faculty from privileges until the following semester, unless parents or guardians show cause of absence which the Faculty shall consider wholly sufficient.

Promptness in reaching the University on the day fixed for the opening of classes is necessary. It is essential that parents and students understand this clearly from the beginning of their connection with the University, as promptness in returning from vacation and recesses, which is requisite in order to prevent the loss of valuable time and the forming of habits of procrastination and negligence of duty, is strictly insisted on. Anyone returning after the date set down for the opening of the fall or spring semester will be required to pay a late registration fee of $2.50 for the first day and $1.00 for each day thereafter. Registration is not completed until a student has attended classes.

The University reserves the right to dismiss at any time a student who fails to give satisfactory evidence of earnestness of purpose and of interest, primarily in the serious work of college life. Dismissal may be made without specific charges and, in rare cases, perhaps on grounds that seem insufficient to students or parents. The University in these cases holds itself to be the more capable judge of what affects the interests of the institution and the student body.

Eligibility Rules

Except where otherwise specifically provided for by the Faculty, students taking part in public debates, oratorical or elocution contests or representing any department of the University in intercollegiate athletic events, as well as all those who are appointed on the staff of the University publications or as officers of student organizations, or are elected as captains or officers of any society, are subject, at the time of their selection or appointment, to the following eligibility rules: (1) They must have no conditions or failures; (2) They must have attained a satisfactory grade in conduct and application during the preceding month and a weighted average of C (77-84) in the last monthly or semester examinations; (3) They must not be under censure.

Any student admitted to the University on a scholarship or as a student-worker, who fails to obtain a semester average of C (77-84) in any of his subjects forfeits his right to his position or scholarship.

The registration of a student is deemed a recognition on his part and on the part of his parents or guardians of compliance with all the rules and regulations of the University, and acceptance of all conditions laid down in the catalogue.

Registration Card

Before registering for instruction in any department, the student must obtain a card signed by the Treasurer of the University, showing that a satisfactory settlement of his account has been made. This

card is handed to the Director of Studies, from whom the student must obtain another blank, write thereon the subjects elected and approved, and present it to his professors for their signature. This registration card is then returned to the Director of Studies, to be filed in his office.

SCHOLARSHIP

No student is eligible to enter any examination, written or oral, nor is he entitled to credit, unless he has been in attendance at 80 per cent of his classes, but students in the College of Law must have been present at 90 per cent of the classes. Absence caused by sickness will not excuse a student from the operation of this rule.

Written Work

The following written work is required of the students, in all the classes indicated:

All upper division students in the College of Liberal Arts must write and deliver to their professor every month an essay of not less than 2500 words, on a subject selected by him from the matter lately studied.

In all classes of Mathematics, three groups of problems are to be set weekly.

In all classes of English, a composition, essay, or poem, and two written exercises in addition, are to be given in weekly by the students.

In all classes of Modern Languages, there shall be as many written exercises as there are classes.

In classes of Latin and Greek three themes are to be handed in each week.

All of these out-of-class exercises will be corrected by the teacher, either in class or out of it, and returned to the students.

Written Examinations

Written examinations are held every six weeks in all subjects and in all departments. They are also held twice a year upon the work done during the preceding semester.

Oral Examinations

At the end of the scholastic year:

1. Students who have followed the course in Elementary Law for one semester or more will be examined therein.

2. All students, regular or special, who have followed the courses in Philosophy, or any part thereof, in the upper division will be examined therein.

3. Upper Division students in the College of Business Administration and in the Pre-Medical Department will be examined in their major subjects.

4. Students in the College of Law will be examined in all Law subjects taken during the year.

No student will be orally examined unless he has passed satis-

factorily all the written examinations given at the end of each semester on the matter therein, or having been conditioned in the first semester examination, has removed the condition. The examination must extend to all work done during both semesters in the subjects indicated. The examination is to be conducted privately before a board of the Faculty who may increase the time allotted to any examination if they see fit. It does not determine the grade of a student's standing, but neither promotion nor credit is given without a successful examination.

General Requirements

In order to be accepted in fulfillment of any requirement for a degree, all work must be completed with grade D (70-76) or over, and the general average of the work must be of grade C (77-84) or above.

The grade for work completed during the semester is computed as follows (all work being marked on the basis of 100% for perfect work):

For each mid-term grade, class-work counts two-thirds and the mid-term examination one-third;

For each semester grade, the average of the three mid-term grades counts two-thirds and the semester examination one-third.

Where an oral examination is required, the student is not promoted or graduated unless he attains therein a passing grade of D (70-76).

Special regulations as to the grades to be maintained by law students and candidates for degrees and certificates will be found under "College of Law, Graduation."

Amount of Work

In order to receive a degree, a student is required to complete the requisite number of semester hours and secure an equal number of credit points, i. e., an average rating of C grade or better in all subjects.

A semester hour is the standard for computing the amount of a student's work. A semester hour is defined as one lecture or recitation one hour in length per week for one semester. Two hours of laboratory work are equivalent to one recitation hour. Two hours of preparation on the part of the student are required for each hour of lecture or recitation.

Regular work for Freshmen is **sixteen hours** per week. For all others it may be from **fifteen** to **eighteen** hours. Candidates for a degree will not be allowed to register for fewer than twelve hours of work.

No Freshman may register for more than **sixteen** credit hours (except in the College of Engineering) without special permission from the Dean of the Faculties, and such registration is not allowed to any student in his first semester of residence.

In the case of students of longer attendance, the Dean may grant permission to take studies up to **eighteen** credit hours a week, after the standing of the student in each study of the previous semester is examined and found to be B (85) or over. On the other hand, students carrying more than the normal amount of work who fail to maintain

a standard of C (77-84) in all of their courses, may be restricted by the Dean to the normal number of units. Even if, because of the difficulty of making the desirable courses total the exact limit, a student is permitted to carry a study-list slightly greater than the limits here set, or if a student transfers from another college where a greater study-list is permitted or required, the credit towards the degree will be limited strictly according to this rule.

Quality of Work

A student's grade of scholarship is given according to the following schedule:

Above passing:	Below passing:
A (93-100), Excellent	E (60-69), Conditioned
B (85-92), Good	F (0-59), Failed
C (77-84), Fair	I, Incomplete
D (70-76), Passed	W, Withdrawn

Conditions

A grade of E (60-69) at the end of a semester indicates a condition. A student who is conditioned in two subjects may be excluded from the University, but without prejudice to his continuing his studies at another University.

Where a student is conditioned at the end of the semester, he will be permitted to remove the condition at the time set for the examinations for the removal of conditions.

Where a student is conditioned in a written or oral examination, given at the end of the school year, he will not be re-examined until the beginning of the next school year; provided however, that where a student is conditioned in a written or oral examination given as one of the final tests before graduation, he will not be re-examined until six months after receiving the conditions.

Where a student has been re-examined in any subject to remove a condition or reach a certain average, another examination may be permitted in the discretion of the Faculty; but in no case may it be taken until two months have elapsed since the former examination. If the student fails to reach the required average no further examination will be allowed.

Any student who enters his Senior year with a condition will have the status of a special student unless this condition is removed within one month after the opening of the first semester.

Failures

A grade of F (0-59) at the close of a semester indicates a failure. A failure in a subject means that the student must repeat the work in class the next time it is given. A student who fails in two subjects may be excluded from the University.

A conditioned student who fails to pass a satisfactory examination at the time set for condition examinations, receives a failure in the subject, unless, on recommendation of his professor, the faculty shall permit him to review a subject in which he is thus deficient with the assistance of an acceptable private tutor; in which case he will be excused from attending the recitations, but will be required

to take the regular examination at the end of the year or half-year.

If the condition is received in a Laboratory course, the student must make up the work in which he is deficient before the time of the condition examinations or receive a failure.

Credit Points

A candidate for a degree must gain not only the number of credit hours required, but his work must reach a certain standard of excellence. In addition to the required number of credit hours necessary for graduation, each student must earn an equal number of credit points, or an average mark in all subjects of C or better.

For a grade of A in a given course a student will receive three times as many credit points as there are credit hours in that course; for a grade of B, twice as many credit points; for a grade of C, as many credit points as credit hours; while D gives credit hours but no points. For every failure at the end of the semester, one credit point per credit hour is to be deducted from the total number of credit points that could otherwise be gained. Such lost points cannot be made up by repeating the course, even though the credit hour in such cases will count towards the total number of credit hours required for graduation.

For example: A four-hour course in which the student receives the grade of A gives 12 credit points; if the grade is B, 8 credit points; if C, 4 credit points; if D, no credit points. If the grade is F, four credit points are deducted.

Thus, in a course where 128 credit hours are required for graduation, the maximum number of credit points that can be secured by a student is 384; the minimum, 128.

Candidates for graduation must attend any course of lectures or any other exercises that have been or may be authorized and equipped by the Faculty, even though such courses receive no value in credits.

No student will be advanced to full junior standing who has less than 64 credit hours and 64 credit points by the end of his sophomore year.

Electing Studies

All students must inform the Director of Studies in writing as to their choice of subjects, and no one may enter upon a course or relinquish one already taken up without his advice and consent, upon penalty of receiving no credit in the first case, and a condition in the subject abandoned, in the second.

Candidacy for Degree or Certificate

Every student who wishes to become a candidate for a degree or certificate in any department of the University must, not later than one month after his entrance, file with the Dean of the Faculties a written statement of the degree or certificate to which he aspires and the work which he proposes to do. He will then be informed whether he may be admitted as a candidate for such degree or certificate and whether the work proposed is satisfactory. Any change of purpose must be similarly announced and approved.

Thesis

Candidates for a degree must submit a thesis on their major or some cognate subject. The thesis shall consist of not fewer than 5000 words and shall be typewritten on National White unruled paper 8½x11 inches. The subject must be submitted to the Dean of the Faculties for approval not later than January 15 and the thesis itself handed in completed on the 15th of April of that same year. The presentation of an acceptable thesis is an absolute prerequisite for admission to final examination. The ultimate decision as to whether the effort merits the certificate or degree rests with the Committee on Theses.

COURSES, UNITS

Courses in the University are divided into three groups: The Lower Division, comprising the studies in the freshman and sophomore years; the Upper Division comprising the studies in the junior and senior years, and leading to the Bachelor's degree; and Graduate Courses, comprising graduate studies, and leading to advanced degrees.

Courses in the Lower Division are numbered from 1 to 100. Courses in the Upper Division are numbered from 101 to 200. Courses for Graduate students are numbered from 201 up. Under certain conditions Lower Division courses may be taken for Upper Division credit, but in such cases it is expected that a higher standard of work shall be done and the instructor will assign additional work for such students. Upper Division subjects may be taken for Graduate credit under such conditions as may be prescribed by the Dean of the Faculties and the Professor in charge.

RECOMMENDATIONS TO OTHER SCHOOLS

No student will be recommended for entrance into any other University or College who has not maintained an average of B (85-92) in every subject throughout his course.

Students wishing Transcripts of Record in order to transfer to another school or for any other purpose should make early and seasonable application for the same. No such statements will be made out during the busy periods of examination and registration. Credentials which are accepted for admission become the property of the University and are kept permanently on file.

SESSIONS

The first semester begins about the middle of August and ends about December 20th.

The second semester begins about January 3rd and ends about May 15th.

As in most departments of the University new courses are not begun in January, students desiring to matriculate at the beginning of the second semester can only be received on condition that they are prepared up to the point then reached by the class which they desire to enter.

GRADUATE DEPARTMENT

The graduate department offers students who have attained academic degrees studies leading to the Master's or Doctor's degree. The determination of these courses rests with the Committee on Post-Graduate Studies. A sufficiently wide option is allowed, much of the instruction being in the form of direction along lines of original research. Courses may be had in the Classics, English and Public Speaking, History, Mathematics, Modern Language, Philosophy, Political and Social Sciences, Law and Engineering.

In the graduate division residence at any place or in any field which may be designated by the Dean of the Faculties as suitable for the work of a candidate for one of the advanced degrees is regarded as a residence at the University.

ADMISSION TO GRADUATE STANDING

The minimum requirements for graduate standing are fulfilled by graduates of colleges and universities of recognized grading, whose credentials evidence ability and promise, and who expect to become candidates for advanced degrees or who purpose to pursue regular advanced professional or research courses. In all cases evidence of the Bachelor's diploma must be presented along with a certified copy of the applicant's complete scholastic record. Admission to the graduate department does not of itself imply admission to candidacy for a higher degree. The grade of work which graduate students may elect and their standing will depend upon the extent and character of their undergaduate courses.

DEGREES

For the degree of Master of Arts (A.M.), the candidate must have an A. B. degree and must devote one year exclusively to resident graduate study, completing at least twenty-four semester hours. He must, moreover, pass a satisfactory examination, both written and oral, in all the subjects studied and he must present a typewritten or printed thesis in his major subject at least four weeks before the date fixed for the annual conferring of degrees. The ultimate decision as to whether the thesis merits the degree rests with the Committee on Theses.

For the degree of Master of Science (M. S.), the same conditions must be fulfilled as for the degree of Master of Arts, provided the candidate has a B. S. degree and his major subject has been scientific.

For the degrees of Chemical Engineer (Ch. E.), Civil Engineer (C. E.), Electrical Engineer (E. E.), and Mechanical Engineer (M. E.), it is required that the candidate be a graduate in the College of Engineering of this University who has been engaged in acceptabe professional work for a period of not less than three years after receiving the Bachelor's degree. Candidates for these degrees must de-

clare their candidacy and file with the Dean of the College of Engineering a detailed statement covering their professional study and experience and an outline of their proposed thesis not later than December 31st preceding the commencement at which they wish to receive the degree, and they must submit the completed thesis not later than one month prior to the date fixed for the annual conferring of degrees.

For the degree of Doctor of Laws (J. D.), the candidate must in addition to completing all the work prescribed for the LL. B. degree complete, under conditions similar to those outlined for the A. M. degree, the courses set forth in the catalogue in Roman Law, International Law and the History of English Law.

For the degree of Doctor of Philosophy (Ph. D.), the candidate must complete not less than three years of graduate work in pursuance of an accepted course of study. The course in question must include one principal and one or two secondary subjects. A reading knowledge of French or German (and of Latin for those electing Scholastic Philosophy as their major course), is a prerequisite. Moreover, the candidate must pass a satisfactory examination, both written and oral, on the work done and present a satisfactory thesis.

No degree in the graduate department will be conferred unless the candidate present himself in person at the commencement at which the degree is awarded.

COLLEGE OF LIBERAL ARTS

COLLEGE OF LIBERAL ARTS

COURSES

Philosophy and Letters. The curriculum of Philosophy and Letters extends over four years and comprises courses of study selected with special regard to their cultural value, but which, far from being of merely cultural importance, afford the most solid foundation for the learned professions and for those larger commercial pursuits characteristic of the present age, which demand intellects carefully trained by the most efficient instruments available. Besides the courses in Philosophy courses in Literature, History and Political Science are offered.

General Science. The curriculum of General Science likewise extends over four years and leads to the degree of Bachelor of Science. With the exception of the classical languages and literature for which modern languages and literature are substituted, this course contains all the strong studies of the curriculum of Philosophy and Letters and in addition offers supplementary courses in Biology, Chemistry, Mathematics, Physics and other scientific subjects.

Pre-Medical. This course, extending over three years, is designed to comply with the requirements of the best medical schools in the United States, and to give the student a preliminary laboratory training which will familiarize him with future work. Students so desiring may extend this course to cover the four years of General Science, leading to the degree of Bachelor of Science.

Pre-Dental. This course follows along the same general lines as the Premedical Course, and aims to prepare students for advanced work in Dentistry.

DEGREES AND REQUIREMENTS

The College of Liberal Arts confers the following degrees:
Bachelor of Arts (A. B.); Bachelor of Science (B. S.) in Philosophy, English, History, Political Science, Chemistry and Biology.

The degree of Bachelor of Arts is conferred on those students

who, in addition to the prescribed courses in Philosophy, present a minimum of six years of Latin.

The degree of Bachelor of Science is conferred on those students whose preparatory training in the classics was not sufficient to warrant their matriculation for the degree of Bachelor of Arts, provided they followed the prescribed courses and present at least twenty-four Upper Division units in any of the courses mentioned above.

DIVISIONS OF THE COLLEGE

The College recognizes a lower and upper division. The work of the lower division comprises the studies of the freshman and sophomore years. The completion of the lower division is a prerequisite for admission to the upper division. For any degree a minimum of 128 units is required, 64 of which the student will normally take in the lower division and 64 in the upper. Each unit represents one hour of the student's time at the University weekly, during one-half year, in lecture or recitation, together with the time necessary in preparation therefor, or a longer time in laboratory or other exercises not requiring preparation.

No student may register for more than sixteen hours (outside of Religion) without special permission of the Faculty, and such registration is not allowed to any student in his first semester of residence. After one semester of regular work, students beyond freshman may receive permission to take not more than eighteen units per semester, provided they have attained a weighted average of at least B (85-92) the preceding semester. On the other hand, students carrying more than the normal amount of work who fail to maintain a standard of C (77-84) in all their courses may be restricted by the Dean to the normal number of units. Even if, because of the difficulty of making the desirable courses total the exact limit, a student is permitted to carry a study-list slightly greater than the limits here set, or if a student transfers from another college where a greater study-list is permitted or required, the credit towards the degree will be limited according to this rule.

LOWER DIVISION

In the lower division it is expected that the student, in addition to fulfilling the prerequisites for the major work upon which he will concentrate in the upper division, will make an effort to establish a basis for that breadth of culture which will give him a realization of the methods and results of some of the more important types of intellectual endeavor, and a mental perspective that will aid him in reaching sound judgments. The lower division requirements were designed to provide in some measure for the accomplishment of this purpose, without unduly limiting the student's opportunity to satisfy his individual tastes and preferences.

Certain courses taken in the high school are accepted as fulfilling in part or in whole some of these lower division requirements.

It is desirable that the student should so arrange his high school program as to reduce the required work in the fields of foreign languages, mathematics and the natural sciences. This makes his programme more flexible, gives him greater freedom of choice, and prepares him to pass more quickly into advanced work or into new fields of study. In no case, however, does the satisfaction of lower division requirements in the high school reduce the amount of work required in the lower division or for the degree. The lower division work presupposes the prescribed entrance requirements, the successful completion of Subject "A" and the specified requirements in the respective courses, along with an essay of not less than 5,000 words in the subject prerequisite for the upper division major, as provided in the General Regulations. The presentation of an acceptable essay is an absolute prerequisite for admission to final examinations.

Pre-legal Requirements are met by students following the regular courses in the College of Liberal Arts provided they include Elementary Law among their electives in their Junior year.

UPPER DIVISION

Only those students who have completed the lower division requirements will be registered as regular students in the upper division.

Degrees in the College of Liberal Arts will be granted upon the following conditions:

1. The total number of units in college courses in the lower and upper divisions must be at least 128.

2. At least 60 units of upper division subjects must be completed after fulfilling the requirements of the lower division. Where lower division units are taken for upper division credit both the quantity and quality of such work must conform to upper division standards.

3. Candidates for graduation must complete a major of 24 upper division units in either Philosophy, English, History, Political Science, Chemistry or Biology.

4. In addition to the units in the major chosen, a minor of 12 units in a specific department must be offered. For those choosing a major other than Philosophy a minor in Philosophy will be prescribed.

5. Candidates for a degree must submit a thesis in their major subject consisting of no fewer than 5000 words, as prescribed in the General Regulations. The presentation of an acceptable thesis is an absolute prerequisite for admission to final examinations. The ultimate decision as to whether the effort merits the degree rests with the Committee on Theses.

6. Candidates for graduation must moreover pass all prescribed oral examinations provided for in the General Regulations.

7. Residence of at least one year immediately preceding graduation is required for the granting of any degree.

Electives. Courses not taken as prescribed courses and not included in the student's Major and Minor sequences may be chosen as free electives to complete the 128 units required for graduation.

Additional Units. When the nature of the course permits, students taking a course as a Major or Minor, with the approval of the Dean of Faculties, may arrange to present work for additional credit in such course. Such work shall be done under the direction of the Professor in charge and in both quantity and quality shall conform to the required standard of the course.

Subject Requirements

(a) Prescribed subjects for the A. B. degree:

	Credit Hrs.		Credit Hrs.
English	12	History	6
Latin	12	Metaphysics	12
Science	8	Ethics	6
Mathematics	6	Logic	4
*Public Speaking	4	Religion	8

(b) Prescribed subjects for the B. S. degree:

English	12	Logic	4
Modern Language	12	*Public Speaking	4
Science	8	Metaphysics	12
Mathematics	6	Ethics	6
Religion	8		

*Four units of Public Speaking are required for those students only who are following the Prelegal course; otherwise only two units are required.

Students who have received the Junior Certificate in other institutions must secure before graduation all the prescribed credits, except those in Science, Mathematics and History. In place of these they may offer such electives as are approved by the Dean of the Faculties.

The prescribed courses in Evidences of Religion will be required only of Catholic students.

DESCRIPTION OF COURSES

THE CLASSICS

LATIN

Lower Division

1. Cicero. The orations studied as models of oratorical art; rapid reading, analysis, discussion, criticism. Latin composition based on special text and matter read in class. Three hours. One semester.

Prerequisite: High School Latin: 4 years. Three units.

2. The Epic—The Aeneid. After reading books VII-XII, the poem will be studied as a whole, special attention being given to the sources, to the epic technique and literary art of Virgil and to the tracing of his influence in the literature of the world. Narration and descriptive composition based chiefly on the text of the Aeneid and implying a discrimination of the vocabulary and syntax of prose and verse. Students will write three compositions weekly. Three hours. One semester.

Prerequisite: Latin 1. Three units.

3. The Latin Historians. Copious reading in Sallust, Curtius, Pliny and Livy, with critical consideration of the historical works of these writers and collateral reading directed to reach an appreciation of their place in Latin literature. Latin composition based on the Latin historians. Three hours. One semester.

Prerequisite: Latin 2. Three units.

4. The Lyric and Elegiac Poets. The Odes of Horace, books I-IV, with selections from the "Ars Poetica," and the elegies of Ovid and Propertius, will be read and carefully studied. Such phases of Roman life as are suggested will be the subject of collateral reading under the direction of the professor. Latin composition. Students will be expected to show facility and elegance of diction in their written work. Three hours. One semester.

Prerequisite: Latin 3. Three units.

7. Special Latin. A rapid review of elementary Latin, including grammar, composition and rapid reading of easy passages. Intended for students with an amount of High School Latin insufficient to enter Latin 1. Hours and credits to be arranged.

Upper Division

101. The Drama. A critical study of the Latin dramatists: Seneca, Plautus, Terence. Three hours. One semester. Three units.

102. Historical Survey of Latin Literature. Three hours. One semester. Three units.

107. Latin Seminar. Hours and credits to be arranged.

GREEK

Lower Division

1. Elementary Greek. The course is intended for those who enter without Greek. Grammar; simple Prose selections; composition. Three hours. First semester. Three units.

2. Elementary Greek. A continuation of Greek 1. Readings from Xenophon, Anabasis, with prose composition based on Xenophon. Three hours. Second semester.

Prerequisite: Greek 1. Three units.

3. Intermediate Greek. A continuation of the grammar, with readings and prose composition. Selected portions of the Iliad or Odyssey of Homer; Homeric Dialect; outline of Greek epic poetry. Three hours. First semester. Three units.

4. Intermediate Greek. A continuation of Greek 3, with special emphasis on sight reading and advanced prose composition. Three hours. Second semester.

Prerequisite: Greek 3. Three units.

Upper Division

170. Seminar. Advanced study of particular problems of Greek life, history and literature.

EDUCATION

Upper Division

101-102. History of Education. A general history of Education from the earliest times to the present day. Embraces in particular dominant phases of modern education; influence of Greek and Medieval Education on the systems prevalent today. Three hours, both semesters. Six units.

103-104. History of Secondary Education. A more detailed study. Catholic influences. The present status of the Catholic school and current problems of administration. Three hours, both semesters. Six units.

105-106. Educational Psychology. A study of the mental development of the adolescent; mental testing; moral and religious development; general laws of learning; mental hygiene; the value of tendencies. Three hours. Both semesters. Six units.

107. Education for Citizenship. Explanation of the opportunities in the modern school for civic training and experience. Clarification by examples of the modern social existence; guide of procedure established. Three hours. One semester. Three units.

108. Secondary Education. A complete survey of the field of secondary education; a detailed study of the secondary studies; the school's extra-curricular activities; guidance functions of the secondary school. This includes an introductory course and an advanced course. Three hours. One semester. Three units.

PHYSICAL EDUCATION

Lower Division

A, B. Prescribed Physical Training for Freshmen. Two hours weekly throughout the year. One unit.

Upper Division

P. E. 101. Principles of Physical Education. Principles and Problems. Students are given charge of classes. Present Movement in physical education. Objectives in naturalized physical education. Education through play. Health education. Two hours. First semester. Two units.

P. E. 102. Theory of Teaching and Leadership in Physical Education in the Secondary Schools. What leadership or teaching requires of the teacher. Definitions and aims of Physical Education. Essentials for successful teaching. Control and class management. Discipline and attention. Leadership and friendly relations. Includes instruction in methods of leadership of value to the teacher in the discipline and control of school teams. One class hour. First semester. One unit.

P. E. 103. Administration of Physical Education in Secondary Schools. Methods of developing good relationship with principal, students, physicians and community. Organization of new classes. Records. Organization of incentives. Public demonstration of work, and how organized. Discipline. Care of equipment. Proper grouping of boys for class work. Observation and functional tests. Four point system and its advantages. A program of competitive athletics for all and how developed. Organization of play at odd hours. Two class hours. Second semester. Two units.

P. E. 104. Practice Teaching. Students are given charge of classes in the city schools. Problems discussed in weekly group conferences. The teaching is supervised by members of the Department of Physical Education. Periods to be arranged. Four units.

ENGLISH

Students who wish to make English their major subject must have completed all the prescribed English courses of the lower division with at least a grade of C.

The major program must include 24 units of upper division English courses. An average grade of C must be maintained in all courses of the major, and, at the end of the senior year, each student must pass a comprehensive final examination.

Lower Division

1. Freshman Rhetoric. A study of the principles of literary art in all its forms, with special attention to the mechanics of writing. Practice writing based on assigned reading. Three hours. First semester. Three units.

2. Introduction to the Study of Poetry. Its nature and kinds, especially the epic, the lyric and the drama. Practice in verse composition in imitation of authors read. Three hours. Second semester. Three units.

3. Early English Literature. A study of the beginnings of English literature, including the Saxon, Norman and Early English periods. Lectures and recitations. Three hours. One semester. Three units.

4. Elizabethan Literature. A study of the more prominent writers during the Tudor and Stuart reigns, with special emphasis on the Elizabethan period. Lectures and recitations. Three hours. One semester. Three units.

5-6. Argumentation and Oratory. Invention, arrangement and development of thought; a course presenting the principles of reasoning and persuasion. Critical analysis and discussion of classic specimens of oratorical composition, ancient and modern. Three hours Two semesters. Six units.

7. Georgian Literature. English Literature from the time of Queen Anne to that of Queen Victoria. Lectures and recitations. Three hours. One semester. Three units.

8. Victorian and Modern English Literature. A study of the leading writers from the reign of Queen Victoria down to the present, including contemporary American writers. Lectures and recitations. Three hours. One semester. Three units.

21. Journalism. News writing and reporting. A study of news values and sources of news; structure and style in news stories; feature writing. Lectures and discussions. Practice and laboratory work. Two hours. Two semesters. Four units.

Upper Division

101. The Essay. An advanced course in the study of the essay. Its nature and kinds. Forerunners of the essay. The essay in English with readings in representative English and American essayists down to the present. Three hours. One semester. Three units.

102. Fiction. The nature and kinds of fiction, illustrated by ancient and modern forms in verse and prose. Plot, setting, characters. Special emphasis on modern prose forms. The novel and the short story with appropriate readings. Three hours. One semester. Three units.

103. Shakespeare. A study of the historical background and the influence of Shakespeare in the development of English dramatic literature. Intensive study of at least four plays with further plays assigned for more rapid reading. Three hours. One semester. Three units.

104. Milton. His background and spirit. Contrast with Dante, Virgil and Homer. Selections from his prose. His principal minor poems. Comus. Paradise Lost. Three hours. One semester. Three units.

105. Chaucer. His medieval background. Dawning influence of the Renaissance. Relation to later English literature. Diction. Versification. Literary characteristics. Readings from Canterbury Tales and from earlier and later minor poems. Three hours. One semester. Three units.

106. Nineteenth Century Poetry. An advanced course based on the study and interpretations of selections from the principal English poets of the nineteenth century. Three hours. One semester. Three units.

107. Nineteenth Century Prose. An intensive study of a select number of English nineteenth century writers of non-fictional prose. Their subject matter, mental traits and qualities of style. Three hours. One semester. Three units.

108. American Literature. Its historical development briefly reviewed. Points of comparison and contrast with other literatures. Readings from the principal American poets and prose writers. Three hours. One semester. Three units.

PUBLIC SPEAKING AND EXPRESSION

Lower Division

1. Fundamentals of Expression. The fundamental principles of expression; the speaking voice; body and expressive movement. Training the voice and body to be the willing and obedient servant of the mind. Each student appears in memorized work in class. Two hours. First semester. One unit.

2. Fundamentals of Expression. A continuation of course 1, with development of impersonation and interpretation. Two hours. Second semester. One unit.

3. Philosophy of Expression. An advanced study of the principles of expression; advanced training of the voice; embodiment of principles in practice work. A short selected cutting of standard literature is presented by each student at each class. Special training in the interpretation of longer selections for public presentation. Two hours. First semester. One unit.

4. Philosophy of Expression. A continuation of course 3, with special emphasis upon impersonation, and standard speeches. Two hours. Second semester. One unit.

11. Fundamentals of Expression. A short course in expression intended primarily for students in the College of Engineering. Fundamentals of expression; the speaking voice; expressive movement; impersonation; interpretation. Each student must appear in memorized work at each class. One hour. First semester. One unit.

12. Fundamentals of Expression. A continuation of course 11. One hour. Second semester. One unit.

Upper Division

101. Aesthetics. An advanced course where every principle taught in previous courses is put to practical test. Each student

is required to memorize and present during the course a short play, in which he impersonates all of the different characters and interprets both the particular parts and the play as a whole. One hour. First semester. One unit.

102. Aesthetics. A continuation of course 101. One hour. Second semester. One unit.

107. Dramatic Seminar. The mechanics of the theater and the staging of a play, both theory and practice. Lines: voice, body, impersonation. Business: pantomime and stage. Plots: ground, light, scenery, property. Mechanics: illusions and terminology. Criticism: Play-reviewing and dramatic criticism. Hours and credits to be arranged.

109. Debating Seminar. The application of the principles of expression to the Debate. A study of the particular form of debating. Presentation and arrangement of ideas. Practical application of methods in connection with a major collegiate debate. Hours and credits to be arranged.

HISTORY

Lower Division

Students who wish to make History their major subject besides completing the other required courses of the lower division must pass the courses in History 1-2 and Political Science 1-2 with at least a grade of C.

The major program must include 24 units of upper division History courses. An average grade of C must be maintained in all courses of the major and, at the end of the senior year, each student must pass a comprehensive final examination.

Lower Division

1-2. History of Modern Europe. A general survey of European civilization from the beginning of the sixteenth century to the present time. Political activities in the various countries. Nationalism. Protestantism and the religious wars. Later irrreligious tendencies and the French Revolution. Social factors of the nineteenth century.

The first half-year's work extends to the Congress of Vienna. The second half-year's work extends to the present time. Three hours. Both Semesters. Six units.

Upper Division

101-102. The Renaissance and the Reformation. A critical study of the Revival of the Old and the Birth of the New Learning. Criticism of existing institutions. Rejection of the authority of the Church. The influence of this period on Italy, Germany and France. Three hours. Both semesters. Six units.

103. Europe in the Seventeenth and Eighteenth Centuries. The rise and fall of Absolutism. Development and consolidation of the national states. The growth of colonial empires. The decline of

Spanish and Dutch power. The rise of England and France and the struggle for world power. Three hours. One semester. Three units.

104. The Revolutionary Period in History. A survey of the revolutionary movements in Europe from the French Revolution of 1870. The anti-Clerical movement. The effects of the Industrial Revolution. The gradual spread of the spirit of democracy. Three hours. One semester. Three units.

105-106. History of the United States. A general course dealing with the different forms of government under which the colonists were ruled. The independence of the colonists in political affairs. The efforts of the colonists to unite for mutual political protection. The protests against coercion. The Declaration of Independence. The Articles of Confederation. The Constitution. The political history of the United States. Three hours. Both semesters. Six units.

107. Europe since 1870. A study of the gradual completion of political democracy. Its application to meet social needs. Its entanglements with nationalist and imperialistic sentiment. The struggle for paramount influence in the Balkan States. Various causes of the World War. A post-war survey of the political, social and economic conditions in Europe. Three hours. One semester. Three units.

108. England under the Tudors and the Stuarts, 1485-1689. The political situation at the close of the War of the Roses. The efforts of the throne to dominate over all political, social and religious institutions. The political theories of the Stuarts. The Puritan Revolution. The civil war. The cromwellian period. The policy of restoration. The revolution of 1688. Three hours. One semester. Three units.

ELEMENTARY LAW

Upper Division

101. Elementary Law. This is an elementary course intended primarily for undergraduates in the Pre-Legal course of the College of Liberal Arts, and is a prerequisite for all advanced courses in the College of Law. Robinson's Elementary Law. Three hours. First semester.

Prerequisite: Junior standing. Three units.

102. Elementary Law. A continuation of Law 1. Three hours. Second semester.

Prerequisite: Law 101. Three units.

For additional courses in Law see Courses in the College of Law.

MATHEMATICS

Lower Division

1. College Algebra. Complete Algebra to include quadratic equations; then more particularly; ratio and proportion, progressions, imaginary and complex numbers, indeterminate equations, binominal theorem, variables and limits, inequalities, interpretation of

results, logarithms, permutations and combinations, undetermined coefficients, determinants and graphic algebra. Three hours. First semester. Three units.

2. Trigonometry. Development of general formulae. Functions and their relations. Logarithms and their uses. Properties of triangles. Application of principles to practical problems in right and oblique triangles. Navigation in plane trigonometrical problems. Spherical trigonometry. Application to problems in astronomy and spherical mensuration. Three hours. One semester. Three units.

13. Analytic Geometry. Loci. Lines. Circle. Different systems of co-ordinates. Conic sections. Supplementary proportions. Loci of second order. Plane curves of higher order. Solid analytical geometry, especially of revolution. General equations. Three hours. One semester.

Prerequisite: Mathematics 1, 2. Three units.

14. Calculus. Fundamental Formulae and principles for differential and integral Calculus. Maxima and minima. Curvature. Surfaces. Volumes. Intermediate forms. Envelopes. Series Expansion. Forms of integration. Practical application. Three hours. One semester.

Prerequisite: Mathematics 13. Three units.

15. Calculus. Continuation of Mathematics 14. Four hours. Second semester.

Prerequisite: Mathematics 14. Four units.

Upper Division

116. Differential Equations. Analysis and deduction of formulae and equations used in physics, mechanics and engineering problems. Applications of formulae and equations given in engineering handbooks to problems. Practical problems and lectures. Two hours. Second semester.

Prerequisite: Mathematics 15. Two units.

117. Methods of Least Squares. Study of the principles and methods. Applications to solution of physical, astronomical, engineering and other problems. The student will be made familiar with this higher and more accurate method of solution of problems in his profession, especialy triangulations. Two hours. Second semester.

Prerequisite: Mathematics 15. Two units.

MODERN LANGUAGES

FRENCH

Lower Division

1. Elementary French. In this course the student is carefully drilled in elementary grammar up to the irregular verbs, attention also being given to acquiring a vocabulary of the more common words. Three hours. One semester. Three units.

2. Elementary French. A continuation of French 1. Special attention is given to the more important irregular verbs, the memoriz-

ing of words, and translation of French into English and vice versa. Three hours. One semester.

Prerequisite: French 1. Three units.

3. Intermediate French. A thorough review of grammar and syntax. The object of this course is to acquaint the student with the general vocabulary and enable him to read the more simple French writers. Three hours. One semester.

Prerequisite: French 2. Three units.

4. Intermediate French. This course continues the work begun in French 3. Regular exercises are given in written work, and copious reading is made from the standard works in order to fit the student for professional reading. Three hours. One semester.

Prerequisite: French 3. Three units.

5, 6. Advanced Composition and Reading. Compositions and sight reading; oral and written reports in French; conversation; survey of French literature. This course is conducted almost entirely in French. Three hours. Both semesters. Six units.

GERMAN

Lower Division

1. Elementary German. Elements of German Grammar. Drill in pronunciation. Vocabulary. Three hours. One semester. Three units.

2. Elementary German. A continuation of German 1. Syntax. Oral and written exercises. Reading from more simple German prose. Three hours. One semester.

Prerequisite: German 1. Three units.

3. Intermediate German. Review of syntax. Translation. Oral and written exercises. Reading from German scientific works to acquire a technical vocabulary. Three hours. One semester.

Prerequisite: German 2. Three units.

4. Intermediate German. Reading and written and oral exercises in technical German. This course aims at preparing the students to undertake the reading of the more difficult scientific works. Three hours. One semester.

Prerequisite: German 3. Three units.

5, 6. Advanced Composition and Reading. Composition; sight reading; oral and written reports in German; conversation; historical survey of German literature. This course is conducted almost entirely in German. Three hours. Both semesters. Six units.

ITALIAN

Lower Division

1. Elementary Italian. Elements of Italian Grammar. Drill in Pronunciation. Vocabulary. Three hours. One semester. Three units.

2. Elementary Italian. A continuation of Italian 1. Syntax;

oral and written exercises. Reading from simpler Italian prose. Three hours. One semester.

Prerequisite: Italian 1. Three units.

3. Intermediate Italian. Review of grammar and syntax. Translation. Oral and written exercises. Reading of somewhat difficult Italian prose. Three hours. One semester.

Prerequisite: Italian 2. Three units.

4. Intermediate Italian. Reading, written and oral exercises. This course aims at preparing the student to read the more difficult Italian writers. Three hours. One semester.

Prerequisite: Italian 3. Three units.

5, 6. Italian Literature. A study of special periods and writers in Italian literature, with emphasis on their literary qualities. The development of fluency in Italian composition and pronunciation. An easy reading, writing and conversational knowledge of Italian is presumed. Hours and credits to be arranged.

SPANISH

Lower Division

1. Elementary Spanish. Elements of Spanish grammar. Drill in pronunciation. Vocabulary. Three hours. One semester.

Three units.

2. Elementary Spanish. A continuation of Spanish 1. Syntax, oral and written exercises. Reading from the simpler Spanish prose. Three hours. One semester.

Prerequisite: Spanish 1. Three units.

3. Intermediate Spanish. Review of grammar and syntax. Translation. Oral and written exercises. Reading of somewhat difficult Spanish prose. Three hours. One semester.

Prerequisite: Spanish 2. Three units.

4. Intermediate Spanish. Reading, written and oral exercises. This course aims at preparing the student to read the more difficult Spanish writers. Three hours. One semester.

Prerequisite: Spanish 3. Three units.

5, 6. Advanced Composition and Reading. Compositions; sight reading; oral and written reports in Spanish; historical survey of Spanish literature. This course is conducted almost entirely in Spanish. Three hours. Both semesters. Six units.

PHILOSOPHY

Students who wish to make Philosophy their major subject besides completing the other required courses of the lower division must pass the courses in Philosophy 5-6 with at least a grade of C.

The major program must include 24 units of upper division courses in Philosophy. An average grade of C must be maintained in all courses of the major and, at the end of the senior year, each student must pass a comprehensive final examination.

Lower Division

1. Logic: Dialectics. This course is concerned mainly with the nature and acts of the mind, ideas, judgments, the syllogism, the laws of correct reasoning; induction and deduction, argumentation and proof. Two hours. One semester. Two units.

2. Logic: Critics. Truth and error, the nature, possibility, degrees, motives and criteria of certitude. Two hours. One semester.

Prerequisite: Philosophy 1. Two units.

3. General Metaphysics. Ontology. A methodical investigation of the fundamental aspects of Being, its primary divisions and transcendental attributes. Potency and Act. Substance and Accident. Three hours. One semester.

Prerequisite: Philosophy 2. Three units.

4. Metaphysics. (a) The Cause. The notion of Cause and its divisions. (b) The universe and matter. General properties of matter. The origin of the material universe; the constitution of inorganic bodies. Life. Spiritual and organic life. Mechanical theory of life. The evolutionist and matter. Three hours. Second semester.

Prerequisite: Philosophy 3. Three units.

5-6. History of Philosophy. A comprehensive survey of ancient, patristic, medieval and modern philosophy. Three hours. Both semesters. Six units.

Upper Division

101. Psychology. Beginning with an explanation of the cerebrospinal nervous system, this course leads on to the study of the phenomena of sensuous life; sense perception, imagination and memory, sensuous appetite, movement and feeling. Rational life; the origin and development of rational concepts, rational appetency, free will and determinism. The origin, nature and destiny of the human soul, the union of the soul and body. The modern psychologists on the nature and existence of the human soul examined and refuted. Three hours. August to February.

Prerequisite: Junior standing. Three units.

102. Theodicy. Proofs of the existence of God; His essence; examination of pantheistic systems; the divine immutability, immensity, eternity; the divine intellect and will; moral attributes of God; His omnipotence; divine providence. Three hours. February to May.

Prerequisite: Philosophy 101. Three units.

103. Fundamental Ethics. Treats the subjects belonging to general theory, the nature of the moral act, the distinction between moral good and moral evil, moral habits, natural and positive moral law; conscience, rights and duties. Four hours. One semester.

Prerequisite: Senior standing. Four units.

104. Applied Ethics. The application of the general principles of ethics to particular and social rights and obligations; the rights to property, life, honor; the rights and obligations of domestic so-

ciety, marriage and divorce. Civil society; its nature and forms; the rights of civil authority. Church and state; the ethics of international relations, peace and war. Four hours. Second semester.

Prerequisite: Philosophy 103. Four units.

105. Philosophy of the Greeks. A study of the development of Greek thought from the Pre-Socratic era, through Plato and Aristotle, to the Greco-Oriental period. Lectures, essays and required readings. Three hours. One semester. Three units.

106. Scholastic Philosophy. The history of philosophy from the Patristic age to the age of Humanism, laying particular stress on the formation and development of scholastic philosophy from the seventh to the end of the thirteenth century. Its decline during the transition to more recent philosophies, 1300-1620. Its revival in the nineteenth century. Lectures, essays and required readings. Three hours. One semester. Three units.

107. Recent Philosophy. Descartes to Kant 1620-1780. A study of the Intellectualist movement from Descartes to Leibnitz and of English and French Empiricism. Lectures, essays and required readings. Three hours. One semester. Three units.

108. Recent Philosophy. Kant and his successors. The Transcendental Idealism of Kant and the Monistic Idealism of his successors. Later varieties of the Empiricist theory. Pragmatism. Neorealism. Spiritualism. Lectures, essays and required readings. Three hours. One semester. Three units.

POLITICAL SCIENCE

Students who wish to make Political Science their major subject besides completing the other required courses of the lower division must pass the courses in History 1-2 and Political Science 1-2 with at least a grade of C.

The major program must include 24 units of upper division courses in Political Science. An average grade of C must be maintained in all courses of the major and, at the end of the senior year, each student must pass a comprehensive final examination.

Lower Division

1-2. Introduction to Political Science. Fundamental definitions and distinctions: state, government, nation, sovereignty, individual liberty. Nature, origin and forms of government. Separation of powers. Functions of government. Individualism, socialism and social reform. Three hours. Both semesters. Six units.

Upper Division

101. American National Government. Origin and development of the Constitution. Powers, functions and interrelation of executive, administrative, legislative and judicial branches of the government. Expansion of governmental activities. The national party system. Three hours. One semester. Three units.

102. National Administration in the United States. History, organization, personnel, business methods and accomplishments of the various departments of the administrative branch of the United States Government. Three hours. One semester. Three units.

103. Theory of the State. A study of political theory dealing with the problems of the nature of the state, the purpose of government, liberty and authority, the nature of law and justice as treated by various political philosophers. Three hours. One semester. Three units.

104. American Political Theory. Underlying theories and principles of American governmental policy. Three hours. One semester. Three units.

105. American State and County Government. Constitutional development and governmental organization of the American states and counties, with special refernce to California. Three hours. One semester. Three units.

106. Municipal Government. The nature, government and problems of cities, particularly in the United States. Three hours. One semester. Three units.

107. Introduction to International Law. The nature and scope of international law. Rights and duties of states. Jurisdiction. Nationality. Relations of states in peace and war. International law and the League of Nations. Three hours. One semester. Three units.

108. International Relations. The nature and importance of international relations. Underlying problems. Nationalism, militarism, imperialism. Agencies of control: diplomatic, administrative. Development of international organization culminating with the League of Nations. Three hours. One semester. Three units.

109. Political Parties in the United States. The political party as a part of the political machinery. Party organization. Campaign methods. Public opinion and party leadership. The true functions of parties. Party responsibility. Three hours. One semester. Three units.

110. (Law 207). Constitutional Law of the United States. Fundamental principles and important cases. Two hours. One semester. Two units.

RELIGION

Lower Division

1. Essentials of Christian Doctrine. Various creeds. The Apostle's Creed. Each Article of the Creed is studied in particular, attention being given to any subject bearing directly on these articles, as Sin, The Powers of the Church, Infallibility, etc. Two hours. First semester. One unit.

2. Essentials of Christian Doctrine. The Law of God. What is commanded or forbidden by the Decalogue is studied in detail. The Precepts of the Church, Grace, Prayer, and each of the Seven Sacraments together with collateral subjects. Two hours. Second semester. One unit.

3. Christianity, A Revealed Religion. What Religion is. What Revelation is. Kinds of revelations. What relevations necessary to

know truths above human knowledge. Man's attitude toward Revelation. Primitive, Patriarchal, Mosaic Revelation. The Divine origin of Pre-Christian Revelation. The Christian Revelation: its origin, evidences of the divinity of its origin. Two hours. First semester. One unit.

4. **The Church: The Dispenser of the Christian Religion.** Institution of the Church. End of the Church. Constitution of the Church. Marks of the Church. The teaching office of the Church. Sources of the Church's teaching. The Rule of Faith. Two hours. Second semester. One unit.

Upper Division

101. **Christian Dogma.** God, the Author and Restorer of our salvation. The existence, nature and attributes of God. The Divine Trinity. God, the Creator of the universe. Various grades of creation. The spiritual and material world. Man. Relation of different orders of creation to one another. God, the Redeemer of fallen man. Decree and plan of redemption. The Redeemer—one person and two natures. The work of redemption. Two hours. First semester. One unit.

102. **The Plan of Redemption as Realized in Individuals.** Grace, actual, habitual or sanctifying. The Sacraments as a means of Grace. The Sacraments are studied in general—their matter and form; their efficacy and the dispositions requisite to receive them validly and with fruit. Then each Sacrament is studied in detail. The Church as a means of salvation. The four last things. Two hours. Second semester. One unit.

103. **Christian Morals in General.** Law as the objective norm of human actions. Conscience as the subjective norm of human actions. The conditions of morality. Moral good and moral evil. Two hours. First semester. One unit.

104. **Christian Morals in Particular.** The Christian's duties toward God—Faith, Hope, Charity. Religion. Direct and indirect acts of worship. The Church as the controller of religious worship. Duties towards ourselves and our neighbor—general and particular. Works of Supererogation or Christian Perfection. Two hours. Second semester. One unit.

105-106. **The New Testament, especially the Four Gospels.** A word for word explanation of the text. Apparent discrepancies explained and harmonized. Two hours. Both semesters. Two units.

SCIENCE

BIOLOGY

Lower Division

1. **General Zoology.** An introductory course designed to lay a broad foundation of the general principles of biology as a part of a liberal education, as a preparation for the study of medicine, or for advanced work in science. Structure, life histories, and physiol-

ogy of typical animals are studied in the laboratory. Two hours Lecture; three hours Laboratory. Second semester. Three units.

2. General Zoology. A continuation of Course 1. Two hours Lecture; three hours Laboratory. Second semester. Three units.

3. Embryology. Cell division, spermatogenesis, ovogenesis, fertilization, cleavage, gastrulation and the origin of the germ layers of various invertebrates and vertebrates. The study of the development of the different systems. The laboratory work includes a study of chick embryo living specimens, 24-72 hours of incubation. A study of chick embryo whole mounts up to 72 hours. A study of serial, cross and sagittal sections of chick embryo up to 72 hours. Two hours Lecture; six hours Laboratory. Second semester.

Prerequisite: Biology 1, 2. Four units.

4. Comparative Anatomy. Comparative studies of adult forms, their organs and organ systems. The laboratory work is devoted to the critical dissection of the cat, and dog fish. Two hours Lecture; six hours Laboratory. First semester. Four units.

11. General Biology. A semester course designed to meet the needs of students not following the premedical course. It deals with living plants and animals in relation to their organic and inorganic surroundings. Three hours Lecture; three hours Laboratory. One semester. Four units.

12. Human Physiology. General view of the structure and functions of the human body. The organs of circulation. Blood and lymph. Respiration. Sources of loss and gain to the blood. Alimentation. Motion and locomotion, special attention being given to the various kinds of muscles, joints, and to the various movements of the body. Sensory organs. The nervous system. Four class hours. Second semester. Four units.

CHEMISTRY

Lower Division

1. Elementary Inorganic Chemistry. Discussion of elementary laws and principles. Properties of the more important elements and their compounds. Open to all students. Two hours Lecture. First semester. Two units.

2. Elementary Inorganic Laboratory. Laboratory course to accompany Chemistry 1. Illustrating fundamental laws and principles. Six hours laboratory. First semester. Two units.

3. General Inorganic Chemistry. A continuation of Chemistry 1. Review of elementary principles and properties of the more important elements with their compounds. Includes a systematic study of important theories. Two hours Lecture. Second semester.

Prerequisite: Chemistry 1, 2. Two units.

4. General Inorganic Laboratory. Laboratory course to accompany Chemistry 3. Six hours Laboratory. Second semester.

Prerequisite: Chemistry 1, 2. Two units.

21. Organic Chemistry. A study of the compounds of carbon and their derivatives. The properties of the more important com-

pounds are discussed, special attention is given to the alphatic series. Two hours Lecture. First semester.

Prerequisite: Chemistry 1-4. Two units.

22. Organic Chemistry Laboratory. Laboratory course accompanying Chemistry 21. The typical cyclic and acyclic compounds are prepared and their properties investigated. Six hours Laboratory. First semester.

Prerequisite: Chemistry 21. Two units.

23. Organic Chemistry. A continuation of Chemistry 21. Two hours Lecture. Second semester. Two units.

24. Organic Chemistry Laboratory. A continuation of Chemistry 22. Six hours Laboratory. Second semester. Two units.

Upper Division

101-102. Quantitative Analysis. Gravimetric and volumetric analysis. The work is regarded as preliminary training for more advanced work. Special attention is given to stoichimetrical relations and the application of the fundamental laws of chemistry to qualitative analysis. One hour Lecture, nine hours laboratory. First semester.

Prerequisites Chemistry 21, 22. Four units.

103-104. Physical Chemistry. Lectures covering the field of physical chemistry, with special emphasis upon the applications to biology; laboratory work consists of exercises in the practice of physical-chemical measurements. Two hours Lecture and six hours Laboratory. One semester.

Prerequisite: Chemistry 101-102. Four units.

GEOLOGY

Lower Division

1. General Geology. A popular course of visual instruction to give the student an intelligent appreciation of the physiographic relief features of the earth and an insight into the probable conditions of the origin and formation of various geologic phenomena. Course consists of lectures, stereopticon projections, and supervised discussion. Two periods. One semester. Two units.

2. Historical Geology. Visual instruction regarding theories of earth formation. Paleontology. Special study of fossils with access to large museum. Lectures on geologic aspects of Evolution. Two periods. One semester. Two units.

PHYSICS

Lower Division

1. Mechanics, Molecular Physics, Sound. General principles of matter. General properties of Bodies. Equilibrium. Gravity. Pendulum. Properties peculiar to Solids. Capillarity. Hydro-dynamics. The properties of gases. Aerodynamics. Production, propagation and reflection of sound. The physical theory of music. Three hours Lecture. First semester. Carhart's College Physics. Three units.

2. Physical Laboratory. Laboratory course to accompany Physics 1. Three hours Laboratory. First semester. One unit.

3. Light, Heat, Electricity. Transmission, velocity and reflection of light. Mirrors. Lenses. Dispersion and achromatism. Optical instruments. The eye. Double refraction. Interference and polarization. Properties of magnetism. Laws of magnetic action. Terrestrial magnetism. Quantitative laws of electric action. Distribution. Electro-static induction of influence. Electric machines. Condensation of electricity. Voltaic cell. Its modifications. Magnetic field due to current. Galvonometers. Ohm's law. Conversion of electric energy into heat. Thermo-electricity. Electro-dynamics. Electro-magnets. Magnetization of iron. Telegraphy. Electro magnetic induction. Passage of electricity through gases. Magneto and dynamo-electric machines. Dia-magnetism. Connection between electricity and light. Carhart's College Physics. Three hours Lecture. Second semester.

Prerequisite: Physics 1, 2. Three units.

4. Physical Laboratory. Laboratory course to accompany Physics 3. Three hours Laboratory. Second semester.

Prerequisite: Physics 1, 2. One unit.

Upper Division

104. Electrical Measurements. A laboratory course in Electrical Measurements intended primarily for students of Electrical Engineering. Three hours Laboratory. One semester.

Prerequisite: Physics 13, 14. One unit.

121. Astronomical Physics. A laboratory course in the study of astronomical, meteorological and seismological phenomena in connection with the Observatory. Hours and credits to be arranged.

Prerequisite: One year of Physics and two years of Mathematics.

COLLEGE OF BUSINESS ADMINISTRATION

COLLEGE OF BUSINESS ADMINISTRATION

GENERAL STATEMENT

The College of Business Administration aims to train students to meet the general as well as specific problems of modern industry.

A knowledge of accounting, banking, credit, labor conditions, marketing, insurance, statistics, business organization and administration and of business law is essential for anyone who aspires to take part in the organization and management of our modern specialized industrial system.

The studies in ethics, logic, psychology, history and science, provide the student with the broader fundamental principles necessary for dealing with the industrial system in its social relationships.

Extreme specialization is not aimed at in the College of Business Administration, although each student is required to select a major in one of the three basic departments, i. e., courses relating specifically to Business Organization and Management, Finance or Accounting.

Regardless of the department selected for a major all students are required to include in their curriculum a sufficient number and diversification of courses to provide a comprehensive preparation for general business problems.

KENNA HALL

The College of Business Administration is located on the main floor of Kenna Hall, with class-rooms, accounting and statistical laboratories, library, club rooms, and offices.

BUSINESS ADMINISTRATION ASSOCIATION

The Business Administration Association, composed of students and faculty in the College of Business Administration, supplements the class work by regular meetings for the discussion of business problems, and by occasional social gatherings.

BUSINESS LECTURES

Throughout the year a series of lectures is given by business and public men of prominence on various problems of interest to the student body. These lectures bring the students into personal contact with representative business men and also enable them to become familiar with practical business problems.

INSPECTION TRIPS

The close connection of the University with the business and industrial establishments of the San Francisco metropolitan district enables the faculty to arrange various inspection trips to such industries as may be of interest. In this way students are given a practical insight into the business organization and working of representative industries.

GRADUATION

The curriculum of the College of Business Administration extends over four years and leads to the degree of Bachelor of Science in Economics.

The work in this college is divided into lower division and upper division work.

Graduation from this college requires the completion of 124 units of college work, of which 64 units constitute the amount required in the lower division of the University, and at least 60 of which are required in upper division.

LOWER DIVISION

The requirements for the lower division in the College of Business Administration are as follows:

1. The successful passing of Subject A, prescribed in all departments of the University.

2. The equivalent of 12 units in one of the following languages: Greek, Latin, French, Spanish, Italian, or German.

3. The successful completion of the following courses which are specifically required in the lower division:

English	6 units
Religion	4 "
Logic	4 "
Philosophy	6 "
Modern Languages	12 "
College Algebra	3 "
Mathematics of Investment	4 "
Principles of Economics (B. A. 1A and 1B)	6 "
Natural Sciences	8 "
Accounting (B. A. 10A and 10B)	8 "
Public Speaking 1, 2	2 "
Economic History	6 "
Physical Education	1 "

SCHEDULE OF COURSES

Freshman Year

First Semester	Units	Second Semester	Units
English (Eng. 1)	3	English (Eng. 2)	3
Logic (Philos. 1)	2	Logic (Philos. 2)	2
Modern Language	3	Modern Language	3
College Algebra (Math. 1)	3	Mathematics of Investment (B. A. 5)	4
Economic History (B. A. 15)	3	Economic History (B. A. 16)	3
Religion (Religion 1)	1	Religion (Religion 2)	1
Public Speaking (P. S. 1)	1	Public Speaking (P. S. 2)	1
Physical Education	½	Physical Education	½

Sophomore Year

Philosophy (Philos. 3)	3	Philosophy (Philos. 4)	3
Accounting (B.A. 10A)	4	Accounting (B.A. 10B)	4
Prin. of Economics (B.A. 1A)	3	Prin. of Economics (B.A. 1B)	3
Modern Language	3	Modern Language	3
Natural Science	4	Natural Science	4
Religion (Religion 3)	1	Religion (Religion 4)	1

UPPER DIVISION

The requirements for graduation are as follows:

Philospohy (Phil. 101-104)	12 units
Religion (Relig. 101-106)	4 units
Commercial Law	10 units
Statistics and Graphic Methods	5 units
Technical subjects	24 units
Electives	5 units
Total	60 units

Candidates for a degree must submit a thesis on their major or allied subject for which one unit credit shall be given.

The technical subjects represent practical and theoretical courses on business subjects given in the College of Business Administration.

DESCRIPTION OF COURSES

The courses in the College of Business Administration are numbered as follows:

Numbers 1 to 99 inclusive denote lower division courses.

Numbers 100 to 199 inclusive denote upper division courses.

B. A. (Business Administration) is the title of all courses.

Courses for Undergraduates

B. A. 1A-1B. Principles of Economics. Required for all upper division work in the College of Business Administration. Two semesters.

Prerequisite: Sophomore standing. Three units each semester.

B. A. 5. Mathematics of Investment. A course covering the mathematical principles upon which interest, discount, annuities, bond issues, depreciation, life insurance, and mine valuations are based. Second semester. Four units.

B. A. 10A. Principles of Accounting. A study of the basic principles of modern accounting with particular emphasis on the mechanical and technical aspects of recording actual business transactions. First semester.

Prerequisite: Sophomore standing. Four units.

B. A. 10B. Principles of Accounting. A continuation of B. A. 10A. Special attention is given to the theory upon which modern accounting is based. Second semester.

Prerequisite: B. A. 10A. Four units.

B. A. 15. Economic History of Europe. A general survey of the economic development of Europe from the eleventh century to modern times, with special emphasis upon the growth and development of English industry and commerce. First semester. Three units.

B. A. 16. Economic History of the United States. A study of the economic development of the United States with special reference to the labor problems arising from the rapid growth of the factory system in industry. Second semester. Three units.

Courses for Advanced Undergraduates and Graduates

B. A. 100. Graphic Methods. A laboratory course in drawing graphs to present business information in concise forms. One two-hour laboratory period per week. First semester. One unit.

B. A. 101. Statistical Methods. Covers methods of presenting statistical information, averages, the effect of chance on the reliability of statistical data and correlation as applied to economic statistics. Second semester. Four units.

Finance Group

B. A. 120. History of Public Finance and Taxation. A survey of Public Finance and Taxation in the United States from colonial times to the present. First semester. Three units.

B. A. 121. Corporation Finance. Deals with the simpler forms of business organization; partnerships, joint stock companies, trusts, etc., leading up to a more detailed study of the modern corporation. Methods of organization and management, corporate securities and intercorporate relations are covered. First semester. Three units.

B. A. 122. Principles of Money and Banking. Approximately one third of the course is devoted to a study of money; its history, kinds of, functions, and systems of in the United States. The remainder of the course is devoted to a general consideration of banking with emphasis upon the National Banking System and the Federal Reserve System. First semester. Three units.

B. A. 123. Investments. The relative merits of the various types of investments, from the point of view of the individual or private investor. Second semester. Three units.

B. A. 124. Advanced Money and Banking. A furthering of the work begun in course 122. The theories of money and of banking systems are explained. Foreign banking and currency systems come in for consideration, but the emphasis in the course is placed upon the Federal Reserve System as it is operated at the present time. Second semester.

Prerequisite: Course 122. Three units.

B. A. 125. Elements of Foreign Exchange. The methods of banking and financing followed in international trade. Detailed consideration of the commercial paper used in foreign trade, such as checks, drafts, bills, etc. Also considers gold movements between countries and their effects on currency, banking and general business. Second semester.

Prerequisite: Course 122. Three units.

B. A. 126. Business Cycles. A study of the history of periods of business depression and prosperity; phenomena attending such fluctuations; and a consideration of various means which have been suggested for the attainment of a greater degree of stability in business. Second semester.

Prerequisite: Course 122 and Course 101. Three units.

Accounting Group

B. A. 130A-130B. Accounting Problems. A study of the preparation of various types of financial statements and the problems peculiar to partnerships, corporations, and insolvent concerns. Illustrative problems solved and discussed. Two semesters.

Prerequisite: Course 10B. Three units each semester.

B. A. 131A-131B. Accounting Problems. A study of methods of accounting for estates, consolidations; problems of property valuation and actuarial science. Two semesters.

Prerequisite: Course 130A-130B. Three units each semester.

B. A. 133. Industrial Accounting. An analysis of the various methods of allocation of costs and overhead in modern industry. Second semester.

Prerequisite: Course 10B. Three units.

B. A. 135. Analysis of Financial Statements. A course in the methods of interpreting the information found in a modern set of books of account and the statements prepared therefrom. First semester.

Prerequisite: Course 10B. Three units.

B. A. 139. Federal Income Taxes. Actual preparation of individual and corporation tax returns as required under the present internal revenue laws. The current revenue laws and the regulations issued thereunder form the basis of the course. Second semester.

Prerequisite: B. A. 10B. Three units.

Labor and Personnel

B. A. 150. Labor Economics. A study of the development of the labor situation in the United States, the forms, aims, and methods of action of present day labor organizations, and legislation on labor matters. Either semester. Three units.

Distribution

B. A. 180. Principles and Methods of International Trade. Economic theory of international trade; significance of foreign trade, merchant marine, and port development; national policies affecting international commerce; export and import methods; export organization; governmental assistance. Second semester. Three units.

B. A. 181. Marketing. The nature and importance of marketing; producer and consumer clarifications; extent of and forces behind markets; marketing functions; cooperative marketing; methods of retail and wholesale distribution; the transportation problems connected with marketing; market price, government authority; trend of marketing methods and policies at present. First semester. Three units.

COMMERCIAL LAW

1. Contracts. Elements of a contract; parties; consideration; illegal and void contracts; construction; verbal and written contracts; Statute of Frauds; termination; breach; damages. First semester. Two units.

2. Negotiable Instruments, Sales. Bills, notes, drafts and checks; acceptance of drafts; certified checks; rights and liabilities of endorsers; presentment; notice of dishonor; protest.

Sales: the contract of sale; immediate and future sales; rights and duties of consignee, consignor and carrier; stoppage and loss in transit; setting aside sales; warranties. Second semester. Two units.

3. Agency, Bailments and Carriers. Who may be agents and how appointed; rights and duties of agents and principals in reference to each other and third parties; termination.

Bailments: nature and classification; innkeepers. Common carriers; carriers and passengers; of goods; telegraph and telephone companies. First semester. Three units.

4. Partnerships and Corporations, Bankruptcy. Articles of copartnership; rights of partners against each other; rights of creditors against firm and partners; kind of partners; termination, liquidation of assets. Corporations: charter and by-laws; stockholders' and directors' meetings; forms of corporate stock; elections; ultra vires acts; directors' and stockholders' liabilities; rights of creditors; dissolution.

Bankruptcy: Who may become bankrupts; exemptions; duties; compositions; discharge; offenses against bankruptcy law; trustees and referees; preferred creditors. Second semester. Three units.

Courses in Mathematics, Modern Languages, English, Religion, Philosophy, Public Speaking and Science required in this department will be found listed under the corresponding titles among the subjects given in the College of Liberal Arts.

COLLEGE OF ENGINEERING

COLLEGE OF ENGINEERING

INTRODUCTION

The foundation of the College of Engineering in the University of Santa Clara was the result of repeated and urgent requests that opportunities should be given young men ambitious to follow the Engineering profession, to pursue and complete the studies leading to it in an environment and atmosphere conducive as well to deep persevering study as to cultural and moral development.

To meet this demand, the Faculty of the University has added sound and thorough courses in Chemical, Civil, Electrical and Mechanical Engineering. As in all other departments of the University, the students are under the moral guidance of the Jesuit Fathers. The technical work of these departments is in the hands of experienced and practical engineers who devote their whole time and attention to the success of their work. As is traditional at Santa Clara, students in Engineering are given individual care, assistance, advice and encouragement. The work exacted is of the highest type; nevertheless, owing to this individual care and to the judicious admission of students as well as the prompt elimination from the various departments of students found to be inadequately prepared in fundamental studies or in seriousness of purpose, there is very little likelihood and no excuse for failure on the part of the student.

The engineer today must be more than a machinist, electrician or surveyor. He can no longer be a self-made man in the old sense. His mind must possess the acumen and culture which only a broad college training and college association can give, and his acquaintance with and love of mathematics and science should be the foundation on which his knowledge of their technical application is based.

This is the ideal which Santa Clara cherishes for the engineers who shall receive their education from her, and the notable work which her graduates are doing proves that this ideal leads to success.

COURSES—DEGREES

Courses are offered leading to the degrees of Bachelor of Chemical Engineering, Bachelor of Civil Engineering, Bachelor of Electrical Engineering and Bachelor of Mechanical Engineering. These courses aim, first, to give the student a thorough knowledge of the sciences on which all Engineering is based; secondly, to develop his ability to acquire accurate information; thirdly, to develop his judgment by practical work so that he may be able to use his knowledge and information to the best advantage.

Chemical Engineering is concerned with the design, construction and operation of plants to carry out chemical processes on a commercial scale. It is applied in such industries as sugar, rubber, dye and chemical manufacturing.

Civil Engineering covers the field of structural work (steel, concrete and stone buildings and bridges), municipal engineering (roads, pavements and sewers), water power development, irrigation and railroad construction. These are all based on the fundamental sciences of Mathematics, Physics and Chemistry, and as much practice

as possible is given to facilitate the application of these sciences to professional work.

Electrical Engineering has to do with the design and construction of electrical machinery and the various applications of electricity to the arts. Electrical and Mechanical Engineering are so closely interrelated that the courses of the first three years are the same, and it is only the Senior courses, such as Telephony and pure Electrical design that are differentiated from the Mechanical Engineering courses.

Mechanical Engineering may be divided into three closely related lines, Design, Manufacturing and Power Generation. The courses in Design begin with mechanical drawing and continue with a study of mechanisms, strength of materials, stresses, adaptability, cost, and commercial worth of machines. Manufacturing has to do with the organization of commercial enterprise, systems of works management, efficiency systems, cost of materials and power and layout of machinery in a factory for maximum output. The subject of Power Generation is covered by courses on steam and gas engines, turbines, boilers, water motors and electric generators, together with the proper operation of all classes of machinery and the application of power to them.

GRADUATE DEGREES

For the degrees of Chemical Engineer (Ch. E.), Civil Engineer (C. E.), Electrical Engineer (E. E.), and Mechanical Engineer (M. E.), it is required that the candidate be a graduate in the College of Engineering of this University who has been engaged in acceptable professional work for a period of not less than three years after receiving the Bachelor's degree. Candidates for these degrees must declare their candidacy and file with the Dean of the College of Engineering a detailed statement covering their professional study and experience and an outline of their proposed thesis not later than December 31st preceding the commencement at which they wish to receive the degree, and they must submit the completed thesis not later than one month prior to the date fixed for the annual conferring of degrees.

ALUMNI SCIENCE HALL

The College of Engineering occupies the entire second floor of the new, reinforced concrete Alumni Science Hall; with offices, class rooms, drafting rooms, road and calorimeter laboratories, blue-print room, and library. The Physical and Chemical lecture rooms and laboratories are immediately adjacent on the other floors.

MONTGOMERY LABORATORIES

The Montgomery Laboratories, a new concrete building, houses the various engineering laboratories, including forge, wood shop, and pattern laboratories, materials testing laboratory, electrical laboratory, mechanical laboratory, offices, and class rooms for laboratory classes.

ENGINEERING SOCIETY

The Engineering Society, composed of students and faculty in the College of Engineering, supplements the class work by regular meetings for the discussion of engineering problems, with special lectures

by engineers of prominence; by occasional social gatherings; and by such other student activities as are found advisable.

INSPECTION TRIPS

One important advantage of the University is its proximity to the many industrial establishments of the San Francisco metropolitan district and this opportunity is taken advantage of by special trips to special industries. In this way students are given a practical insight into the working of these engineering industries.

STUDENT BRANCHES:

AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Student branches of the A. S. M. E. and A. I. E. E. have been established at the University, and are open to students of Mechanical and Electrical Engineering for the discussion of current problems.

REQUIREMENTS FOR GRADUATION

In all groups of the College of Engineering, 152 credits are required for graduation. A credit is given for each one-hour recitation, or lecture, per week, carried satisfactorily for one semester, or for three hours per week spent in laboratory, drawing room or shop. All regular students free from deficiencies in university work may register for 19 units of new work.

At least two summer vacations must be spent on engineering work before graduation. A detailed report of this work, containing at least three hundred words, must be handed to the Dean of the College of Engineering within one month of the opening of the first semester.

Before one is admitted to any degree a thesis must be submitted on a subject chosen by the student with the approbation of the Dean of the Faculties. It must bear on the matter studied or at least on cognate matter and must give evidence of original investigation of some engineering problem. It shall consist of no fewer than 5000 words and should be typewritten on paper 8½x11 inches. The submission of an acceptable thesis is an absolute prerequisite to admission to final examinations. The ultimate decision as to whether the effort merits the degree rests with the Committee on Theses.

Residence of at least one year immediately preceding graduation is required for the granting of any degree.

SCHEDULE OF COURSES

CHEMICAL ENGINEERING

Freshman Year—First Semester

	Hours Attendance Recitation	Laboratory	Units
College Algebra (Math. 11) } Trigonometry (Math. 12) }	5		5
Chemistry (Chem. 1, 2)	2	6	4
Mechanical Drawing (G. E. 1)		6	2
English (Eng. 11)	3		3
Public Speaking (Pub. Speak. 11)	1		1
Review of Engineering Industries (G. E. 9)	1		1
Shopwork (M. E. 10)		6	2
Religion (Religion 11)	2		1
Physical Education (P. E. A)		2	½

Second Semester

Analytic Geometry (Math. 13)	5		5
Chemistry (Chem. 3, 4)	2	6	4
Physics (Phys. 11)	2		2
Descriptive Geometry (G. E. 2)	1	4	2
English (Eng. 12)	3		3
Review of Engineering Industries (G.E.9a)	1		1
Shopwork (M. E. 11)		6	2
Religion (Relig. 12)	2		1
Physical Education (P. E. B)		2	½

Sophomore Year—First Semester

Calculus (Math. 14)	5		5
Technical Mechanics (G. E. 7)	4		4
Physics (Phys. 12, 13)	2	6	4
Chemistry (Chem. 21, 22)	2	6	4
Electricity (E. E. 10)		3	1
English (Engl. 13)	3		3
Religion (Religion 13)	2		1

Second Semester

Calculus (Math. 15)	5		5
Technical Mechanics (G. E. 8)	4		4
Physics (Phys. 14, 15)	2	6	4
Chemistry (Chem. 23, 24)	2	6	4
Electricity (E. E. 11)		3	1
English (Engl. 14)	3		3
Religion (Religion 14)	2		1

CHEMICAL ENGINEERING

Junior Year—First Semester

	Hours Attendance Recitation	Laboratory	Units
Mechanics of Materials (G. E. 109)	5		5
Machine Design (M. E. 105)		6	2
Heat Power (M. E. 118)	2		2
Electrical Measurements (Phys. 104)		3	1
Chemistry (Chem. 101, 102)	1	9	4
Electrical Engineering (E. E. 101)	3		3
E. E. Laboratory (E. E. 109)		3	1
Philosophy (Philos. 111)	3		3
Religion (Religion 111)	2		1

Second Semester

Hydraulics (G. E. 121)	4	3	5
Heat Power (M. E. 119)	3		3
Electrical Engineering (E. E. 102)	3		3
E. E. Laboratory (E. E. 110)		3	1
Machine Design (M. E. 106)		6	2
M. E. Laboratory (M. E. 116)		3	1
Chemistry (Chem. 103, 104)	2	6	4
Philosophy (Philos. 112)	3		3
Religion (Religion 112)	2		1

Senior Year—First Semester

Thermodynamics (M. E. 120)	3		3
Industrial Engineering (M. E. 123)	2		2
Alternating Currents (E. E. 103)	3		3
E. E. Laboratory (E. E. 111)		6	2
M. E. Laboratory (M. E. 117)		6	2
Industrial Chemistry (Chem. 105)		6	2
Philosophy (Philos. 113)	3		3
Religion (Religion 113)	2		1

Second Semester

Seminar (G. E. 127)	1		1
Alternating Currents (E. E. 104)	3		3
Estimates and Specifications (G. E. 131)	2		2
Economics (Econ. 111)	1		1
Business Law (Law 111)	1		1
Seminar (Chem. 170)			4
Philosophy (Philos. 114)	3		3
Religion (Religion 114)	2		1

CIVIL ENGINEERING

Freshman Year—First Semester

	Hours Attendance Recitation	Laboratory	Units
College Algebra (Math. 11) } Trigonometry (Math. 12) }	5		5
Chemistry (Chem. 1, 2)	2	6	4
Mechanical Drawing (G. E. 1)		6	2
English (Eng. 11)	3		3
Public Speaking (Pub. Sp. 11)	1		1
Review of Engineering Industries (G. E. 9)	1		1
Plane Surveying (C. E. 1)	2		2
Surveying Laboratory (C. E. 2)		3	1
Religion (Religion 11)	2		1
Physical Education (P. E. A)		2	½

Second Semester

Analytic Geometry (Math. 13)	5		5
Chemistry (Chem. 3, 4)	2	6	4
Physics (Phys. 11)	2		2
Descriptive Geometry (G. E. 2)	1	4	2
English (Eng. 12)	3		3
Review of Engineering Industries (G.E.9a)	1		1
Surveying Laboratory (C. E. 3)		3	1
Religion (Religion 12)	2		1
Physical Education (P. E. B)		2	½

Sophomore Year—First Semester

Calculus (Math. 14)	5		5
Technical Mechanics (G. E. 7)	4		4
Physics (Phys. 12, 13)	2	6	4
English (Eng. 13)	3		3
Curves and Earthwork (C. E. 14)	1		1
Highway and Railway Surveying (C. E. 15)		6	2
Religion (Religion 13)	2		1

Second Semester

Calculus (Math. 15)	5		5
Technical Mechanics (G. E. 8)	4		4
Physics (Phys. 14, 15)	2	6	4
English (Eng. 14)	3		3
Advanced Surveying (C. E. 16)	1		1
Topographical Surveying (C. E. 17)		6	2
Religion (Religion 14)	2		1

CIVIL ENGINEERING

Junior Year—First Semester

	Hours Attendance Recitation	Laboratory	Units
Mechanics of Materials (G. E. 109)	5		5
Materials Testing Laboratory (G. E. 110)		3	1
Differential Equations (Math. 116)	2		2
Graphics (C. E. 118)		6	2
Foundations and Substructures (C. E. 119)	2		2
Structural Analysis (C. E. 120)	2		2
Materials of Construction (C. E. 130)	2		2
Philosophy (Philos. 111)	3		3
Religion (Religion 111)	2		1

Second Semester

Hydraulics (G. E. 121)	4	3	5
Electricity (E. E. 114)	1	3	2
Structural Analysis (C. E. 121)	3		3
Highway Engineering (C. E. 150)	2		2
Highway Laboratory (C. E. 151)		6	2
Philosophy (Philos. 112)	3		3
Religion (Religion 112)	2		1

Senior Year—First Semester

Geology (Geol. 33)	3		3
Estimates and Specifications (G. E. 131)	2		2
Economics (Econ. 111)	1		1
Structural Design (C. E. 122)	2		2
Structural Design Laboratory (C. E. 123)		9	3
Reinforced Concrete (C. E. 131)	3		3
Sewerage (C. E. 140)	3		3
Philosophy (Philos. 113)	3		3
Religion (Religion 113)	2		1

Second Semester

Business Law (Law 111)	1		1
Structural Design Laboratory (C. E. 124)		9	3
Water Supply (C. E. 141)	3		3
Railway Construction (C. E. 160)	3		3
Option	2		2
Seminar (G. E. 127)	1		1
Thesis (C. E. 180)			2
Philosophy (Philos. 114)	3		3
Religion (Religion 114)	2		1

Senior Options

Reinforced Concrete (C. E. 132)	2		2
Irrigation Engineering (C. E. 142)	2		2
Municipal Engineering (C. E. 153)	2		2
Highway Administration and Finance (C. E. 152)	2		2
Tunneling (C. E. 170)	2		2

ELECTRICAL AND MECHANICAL ENGINEERING

Freshman Year—First Semester

	Hours Attendance Recitation	Laboratory	Units
College Algebra (Math. 11) } Trigonometry (Math. 12) }	5		5
Chemistry (Chem. 1, 2)	2	6	4
Mechanical Drawing (G. E. 1)		6	2
English (Eng. 11)	3		3
Public Speaking (Pub. Speak. 11)	1		1
Review of Engineering Industries (G. E. 9)	1		1
Shopwork (M. E. 10)		6	2
Religion (Religion 11)	2		1
Physical Education (P. E. A)		2	½

Second Semester

Analytic Geometry (Math. 13)	5		5
Chemistry (Chem. 3, 4)	2	6	4
Physics (Phys. 11)	2		2
Descriptive Geometry (G. E. 2)	1	4	2
English (Eng. 12)	3		3
Review of Engineering Industries (G.E.9a)	1		1
Shopwork (M. E. 11)		6	2
Religion (Religion 12)	2		1
Physical Education (P. E. B)		2	½

Sophomore Year—First Semester

Calculus (Math. 14)	5		5
Technical Mechanics (G. E. 7)	4		4
Physics (Phys. 12, 13)	2	6	4
Electricity (E. E. 10)		3	1
English (Eng. 13)	3		3
M. E. Laboratory (M. E. 15)		6	2
Religion (Religion 13)	2		1

Second Semester

Calculus (Math. 15)	5		5
Technical Mechanics (G. E. 8)	4		4
Physics (Phys. 14, 15)	2	6	4
Electricity (E. E. 11)		3	1
Drawing (M. E. 4)		6	2
English (Eng. 14)	3		3
Religion (Religion 14)	2		1

ELECTRICAL AND MECHANICAL ENGINEERING

Junior Year—First Semester

	Hours Attendance Recitation	Laboratory	Units
Mechanics of Materials (G. E. 109)	5		5
Materials Testing Laboratory (G. E. 110)		3	1
Heat Power (M. E. 118)	2		2
Electrical Measurements (Phys. 104)		3	1
Machine Design (M. E. 105)		6	2
Differential Equations (Math. 116)	2		2
Electrical Engineering (E. E. 101)	3		3
E. E. Laboratory (E. E. 109)		3	1
Philosophy (Philos. 111)	3		3
Religion (Religion 111)	2		1

Second Semester

Hydraulics (G. E. 121)	4	3	5
Heat Power (M. E. 119)	3		3
Electrical Engineering (E. E. 102)	3		3
E. E. Laboratory (E. E. 110)		3	1
Machine Design (M. E. 106)		6	2
M. E. Laboratory (M. E. 116)		3	1
Surveying (C. E. 100)		3	1
Philosophy (Philos. 112)	3		3
Religion (Religion 112)	2		1

ELECTRICAL ENGINEERING

Senior Year—First Semester

Thermodynamics (M. E. 120)	3		3
Industrial Engineering (M. E. 123)	2		2
Electrical Design (E. E. 106)		6	2
Structural Design (C. E. 125)	2	3	3
Alternating Currents (E. E. 103)	3		3
E. E. Laboratory (E. E. 111)		6	2
Philosophy (Philos. 113)	3		3
Religion (Religion 113)	2		1

Second Semester

Power Plant Design (E. E. 107)		6	2
Alternating Currents (E. E. 104)	3		3
Electrical Design (E. E. 108)		6	2
E. E. Laboratory (E. E. 112)		6	2
Business Law (Law 111)	1		1
Estimates and Specifications (G. E. 131)	2		2
Economics (Econ. 111)	1		1
Seminar (G. E. 127)	1		1
Philosophy (Philos. 114)	3		3
Religion (Religion 114)	2		1
Thesis (E. E. 170)			2

MECHANICAL ENGINEERING

Senior Year—First Semester

	Hours Attendance Recitation	Laboratory	Units
Thermodynamics (M. E. 120)	3		3
Industrial Engineering (M. E. 123)	2		2
Alternating Currents (E. E. 103)	3		3
Machine Design (M. E. 107)		6	2
Structural Design (C. E. 125)	2	3	3
M. E. Laboratory (M. E. 117)		6	2
Philosophy (Philos. 113)	3		3
Religion (Religion 113)	2		1

Second Semester

Seminar (G. E. 127)	1		1
Power Plant Design (M. E. 108)		6	2
Alternating Currents (E. E. 104)	3		3
M. E. Laboratory (M. E. 117a)		6	2
Machine Design (M. E. 107a)		6	2
Estimates and Specifications (G. E. 131)	2		2
Economics (Econ. 111)	1		1
Business Law (Law 111)	1		1
Philosophy (Philos. 114)	3		3
Religion (Religion 114)	2		1
Thesis (M. E. 170)			2

DESCRIPTION OF COURSES

CIVIL ENGINEERING

C. E. 1. Plane Surveying. Theory, use, and adjustment of tape, compass, level, and transit. Land and city surveying. Plotting field notes and computation of areas. Breed and Hosmer's Principles and Practice of Surveying, Vol. I. Two hours recitation. First semester.

Prerequisite: Math. 12. Two units.

C. E. 2. Surveying. Field work in the use of the chain, compass, level, and transit. Field notes and methods. To be taken concurrently with C. E. 1. Pence and Ketchum, Surveying Manual. Three hours laboratory. First semester.

Prerequisite: Math. 12. One unit.

C. E. 3. Surveying. Continuation of C. E. 2. Pence and Ketchum, Surveying Manual. Three hours laboratory. Second semester.

Prerequisite: C. E. 2. One unit.

C. E. 14. Curves and Earthwork. Simple, compound, reverse, and transition curves. Measurement and computation of earthwork. The mass diagram and its use in the computation of "haul". Searles and Ives, Field Engineering, Vols. I & II. One hour recitation. First semester.

Prerequisite: C. E. 1, 2, & 3. One unit.

C. E. 15. Highway and Railway Surveying. Field work in simple, compound, reverse, and transition curves. Complete survey notes and a map for a short railway or highway project. To be taken concurrently with C. E. 14. Searles and Ives, Field Engineering, Vols. I & II. Six hours laboratory. First semester.

Prerequisite: C. E. 1, 2, & 3. Two units.

C. E. 16. Advanced Surveying. Base line measurement and triangulation. Trigonometric, barometric, and precise leveling. Use of the plane table. Topographic and hydrographic surveying. Field astronomy. Breed and Hosmer's Principles and Practice of Surveying, Vol. II. One hour recitation. Second semester.

Prerequisite: C. E. 1. One unit.

C. E. 17. Topographical Surveying. Field work with the plane table. Survey of a small area with transit and stadia and the platting of the field notes. Practice in stellar and solar observations. To be taken concurrently with C. E. 16. Breed and Hosmer's Principles and Practice of Surveying, Vol. II. Six hours laboratory. Second semester.

Prerequisite: C. E. 1, 2, & 3. Two units.

C. E. 100. Plane Surveying. Use and adjustment of tape, level, and transit. For the Electrical and Mechanical Engineers. Pence and Ketchum's Surveying Manual. Three hours laboratory. Second semester. One unit.

C. E. 118. Graphics. Principles and methods. Application to roof trusses under dead, snow, and wind loads. Complete stresses for triangular and crescent trusses. Unsymmetrical loads for trusses.

Bridge trusses. Ketchum's Steel Mill Buildings. Six hours laboratory. First semester. Two units.

C. E. 119. Foundations and Substructures. Soil investigation and excavation methods. Cofferdams, open and pneumatic caissons. Use of timber, concrete, and sheet piling. Design of footings, bridge piers, and abutments. Hool and Kinne's Foundations, Abutments and Footings. Two hours recitation. First semester. Two units.

C. E. 120. Structural Analysis. Determination of stresses in framed structures. Roof trusses. Stress analysis of horizontal and inclined cord bridge trusses for dead, live, impact, and wind loads. Lateral trusses and portal bracing. Deflection of trusses, and secondary stresses. Statically indeterminate frames. Hool and Kinne's Stresses in Framed Structures. Two hours recitation. First semester. Two units.

C. E. 121. Structural Analysis. Continuation of C. E. 120. Hool and Kinne's Stresses in Framed Structures. Three hours recitation. Second semester. Three units.

C. E. 122. Structural Design. The design of steel and timber roof trusses, plate girders, highway and railway bridges. Hool and Kinne's Steel and Timber Structures. Two hours recitation. First semester. Two units.

C. E. 123. Structural Design. The design and detailing of a roof truss, plate girder, and a railway or highway bridge. Design and detailing of reinforced concrete structures. To be taken concurrently with C. E. 122. Hool and Kinne's Steel and Timber Structures. Carnegie's Pocket Companion, or Steel Construction by A. I. S. C. Nine hours laboratory. First semester. Three units.

C. E. 124. Structural Design. Continuation of C. E. 123. Hool and Kinne's Steel and Timber Structures. Carnegie's Pocket Companion, or Steel Construction by A. I. S. C. Nine hours laboratory. Second semester. Three units.

C. E. 125. Structural Design. The design and detailing of wood, steel, and concrete structures suitable for the Electrical and Mechanical Engineer. Bishop's Structural Drafting and Design. Steel Construction by A. I. S. C. One hour recitation, six hours laboratory. First semester. Three units.

C. E. 130. Materials of Construction. The manufacture and properties of the more common materials of engineering construction. Cementing materials, concrete and stone, clay products, timber and metals. Mills-Hayward's Materials of Construction. Two hours recitation. First semester. Two units.

C. E. 131. Reinforced Concrete. Principles and practice of reinforced concrete design as applied to beams, girders, floor slabs, and columns. Hool's Reinforced Concrete Construction, Vol. I. Three hours recitation. First semester. Three units.

C. E. 132. Reinforced Concrete. Principles and practice of reinforced concrete building design and construction. Hool's Reinforced Concrete Construction, Vol. II. Two hours recitation. Second semester. Two units.

C. E. 140. Sewerage. Collection, purification and disposal of sewage. The design and construction of sewers and sewage treatment works. Metcalf and Eddy's Sewerage and Sewage Disposal. Three hours recitation. First semester. Three units.

C. E. 141. Water Supply. A study of the source, the quality and quantity of water necessary for a municipal supply. Water supply works for the collection, purification and distribution of water. Turneaure Russell's Public Water Supply. Three hours recitation. Second semester. Three units.

C. E. 142. Irrigation Engineering. Collection, storage and distribution of water. Application of water to the land. Operation and maintenance of irrigation systems. Davis-Wilson's Irrigation Engineering. Two hours recitation. Second semester. Two units.

C. E. 150. Highway Engineering. Design, construction and maintenance of roads and pavements. Alignment, grade and drainage of roads. Gravel, stone, concrete, block and sheet pavement types. Agg's Construction of Roads and Pavements. Two hours recitation. Second semester. Two units.

C. E. 151. Highway Tests. Highway materials testing. Cement, sand, gravel, rock, and bituminous materials. Hubbard's Laboratory Manual of Bituminous Materials. Bulletin No. 1216, U. S. Dept. of Agriculture, Tentative Standard Methods of Sampling and Testing Highway Materials. Six hours laboratory. Second semester. Two units.

C. E. 152. Highway Administration and Finance. A study of the management and economic phases of highway engineering. Organization and administration of highway department's staffs. Highway finance, federal aid, bonds, and special assessments. Agg and Brindley's Highway Administration and Finance. Two hours recitation. Second semester. Two units.

C. E. 153. Municipal Engineering. Problems of the city engineer. City planning, disposal of city wastes, street cleaning and lighting, parks and waterways. Folwell's Municipal Engineering Practice. Two hours recitation. Second semester. Two units.

C. E. 160. Railway Construction. Methods and practice of railway construction and maintenance. Standard railway structures, trestles, culverts, minor bridges, tunnels, ballast, rails and fastenings, terminals and yards. Webb's Railroad Construction. Three hours recitation. Second semester. Three units.

C. E. 170. Tunneling. Transportation, water and mine tunnels. Methods of construction under various soil conditions. Tunnel machinery, drilling, blasting and mucking. Tunnel lining and ventilation. Burton and Davies' Modern Tunneling. Two hours recitation. Second semester. Two units.

C. E. 180. Thesis. Original investigation of some engineering problem. Two units.

ELECTRICAL ENGINEERING

E. E. 10. Electricity—The Electric Circuit. The Magnetic Circuit. The Dielectric Circuit. Generation of Voltage, Current and Force. Electric Power. Electric Energy. Magnusson's Direct Currents. Three hours combined class and laboratory.

Prerequisite: Sophomore standing. One unit.

E. E. 11. Electricity—Systems of Units. Symbols. Indicating Instruments. The Dielectric Field. The Magnetic Field. Magnetic Properties of Iron and Steel. Magnusson's Direct Currents. Three hours combined class and laboratory. Second semester.

Prerequisite: E. E. 10. One unit.

E. E. 101.—Electrical Engineering. Magnetic field. Magneto-motive force. Hysteresis. Elementary dynamo. The magnetic circuit. Armature core. Commutator. Brush shifting. Sparking at brushes and remedies. Different types of generators. Methods of transmitting, distributing and controlling direct current. Direct current series and parallel systems. Feeders and mains. High tension D. C. systems. Timbie and Bush's Principles of Electricity. Three class hours. First semester.

Prerequisite: Physics 13, 14. Three units.

E. E. 102. Electrical Engineering. Self and mutual inductance. Capacity. Impedance. Phase angle and power factor. Series and repulsion types. Synchronous motors. Induction motors, single and polyphase. Methods of starting. Speed control. Electric drive for cranes, elevators, presses, pumps, fans, mill-work, etc. Timbie and Higbie's Alternating Current Electricity. First Course. Three class hours. Second semester.

Prerequisite: Physics 12 and E. E. 101. Three units.

E. E. 103. Alternating Current Machinery. Electric power systems. Translating, controlling and transmitting equipment. Constant potential and constant current transformers. Efficiency, regulation and protection. Polyphase systems of generation. Two phase and three phase and conversion from one system to another. Calculation of alternating current transmission lines. Regulation of voltage. Power factor of systems. Switch-boards. Apparatus used on Switch-boards. Location. Types. Pole lines. Cable and conduit systems. Timbie and Higbie's Alternating Current Electricity. First course. Three class hours. First semester.

Prerequisite: E. E. 102. Three units.

E. E. 104. Alternating Current Machinery. Continuation of E. E. 103. Timbie and Higbie's Alternating Current Electricity, Second Course. Lawrence's Alternating Current Machinery. Three class hours. Second semester. Three units.

E. E. 105. Telephony. The magneto-telephone. The microphone. Carbon transmitters. Induction coils. Call methods. Series and parallel circuits. Subscribers' equipment. Line disturbances. Common battery systems. Exchange equipment. Party lines. Automatic systems. Combined telegraphy and telephony. Wireless telegraphy. Generation of electrical waves. Transmitting and receiving appar-

atus. Electrical Engineer's Handbook. One class hour. First semester.

Prerequisite: Physics 12 and E. E. 101. One unit.

E. E. 106. Design of Direct Current Machinery. Electrical and mechanical theory applied to the design of D. C. machinery. Switches, heaters, controllers, etc. Complete calculations and working drawings for a dynamo or motor, to fulfill given specifications. Still's Electric Machinery Design. Six hours Drawing. First semester.

Prerequisite: E. E. 101. Two units.

E. E. 107. Power Plant Design. Design of a complete plant to furnish light and power for a city of given size. Consideration of the elements: illumination, charges, operating expenses, income, organization and administration, reports, specifications, contracts and statistics. Weingreen's Electric Power Plant Engineering. Six hours Drawing. Second semester.

Prerequisite: E. E. 103-106. Two units.

E. E. 108. Electrical Design. Design of alternators, transformers, induction motors and other alternating current apparatus. Thorough investigation and complete design of some unit assigned. Still's Electric Machinery Design. Six hours Drawing. Second semester. Two units.

E. E. 109. Electrical Engineering Laboratory. Determination of the resistance of electrical circuits. Relation between speed, field strength and voltage. Operation of shunt series and compound-wound generators. Distribution of potential around commutator. Heat runs to determine load capacity. Stray power. Starting boxes. Counter electro-motive force. Shunt, series, compound and differentially wound motors. Operation of shunt and compound wound generators in parallel. Distribution of load. Control of series circuits. Regulation of arc lamps. Constant potential and constant current generators. Karapetoff's Experimental Electrical Engineering. Three hours laboratory. First semester.

Prerequisite: Must be taking E. E. 101. One unit.

E. E. 110. Electrical Engineering Laboratory. Calibration of ammeters and voltmeters. Calibration and adjustments of A. C. and D. C. watt-hour meters. Determination of resistances. Measurement of inductance and capacity. Permeability of samples of iron and steel. Determination of hysteresis. Storage Batteries. Testing. Candlepower of lamps from standard candle. Cable testing. Insulation resistance. Practice in operation of A. C. motors, generators and other apparatus. Three hours laboratory. Second semester. One unit.

E. E. 111. Electrical Engineering Laboratory. Alternating current circuits. Inductance, capacity, impedance, phase, relation, true and apparent watts and power factor. Alternators. Magnetization curves. Losses of synchronous impedance. Synchronous motors. Methods of Synchronizing. Methods of starting rotary converters. Compounding. Calculation of efficiency. Alternators in parallel. Transformers. Regulation. Heating and Efficiency. Use as induction regulators and phase changers. Wave shapes by instantaneous

contact and by the oscillograph. Resonance. Methods of starting induction motors. Efficiency by brake tests. Operation of induction generator. Reports of complete tests on plants. Six hours laboratory. First semester. Two units.

E. E. 112—Electrical Engineering Laboratory. Continuation of E. E. 111. Six hours laboratory. Second semester.

Prerequisite: E. E. 111. Two units.

E. E. 114. Electricity. A short course similar to E. E. 101 and E. E. 109 for Civil Engineering Students. Gray's Electrical Engineering. One hour Lecture, three hours Laboratory. Second semester. Two units.

E. E. 115. Electric Power Transmission. Electric principles and theory. Economic principles and calculations. Insulation of overhead lines. Transient phenomena. Underground lines. Mechanical design of transmission lines. Still's Electrical Transmission. Two class hours. Second semester. Two units.

E. E. 116. Radio. Fundamental Ideas and Laws. Resistance, Inductance and Capacity. Laws of Oscillating currents. Spark Telegraphy. Vacuum Tubes and their operation on typical circuits. Continuous-wave telegraphy. Radio Telephony. Wavemeters and their use. Morecraft's Principles of Radio Communication. Two class hours. One semester. Two units.

E. E. 170. Thesis and Seminar. Original investigation of some Engineering problem. Two units.

ECONOMICS

111. Economics. Object. Production, distribution, circulation and consumption of wealth. Production of wealth. Earth and natural agents. Labor and industry. Capital. Distribution of wealth. Individual property. Share of laborers. Circulation of wealth. Exchange. Taxes. Applications. This course is designed to give the student a broader view of his standing as a professional man in the community. One class hour. Second semester. One unit.

For additional courses in Economics, Sociology, Political Science, and Business Administration see the Colleges of Liberal Arts and Business Administration.

ENGLISH

11. Composition and Rhetoric. Lectures and recitations. Exposition; the unity and coherence of the whole composition, with a thorough review of the paragraph, the sentence and the right choice of words. The nature of Argumentation, including the invention and arrangement of material. Appropriate readings. Three hours. First semester. Three units.

12. Composition and Rhetoric. Continuation of Eng. 11. The characteristics of Description and Narration. Expository description: description in narrative pieces. Simple Narrative. The Story. Illustrative readings. Three hours. Second semester.

Prerequisite: Eng. 11. Three units.

13. Readings in English Literature. Selected readings in the Early English and Elizabethan periods, with adequate biographical

and critical study of the principal authors. Three hours. First semester.

Prerequisite: Eng. 12. Three units.

14. **Readings in English Literature.** Continuation of Eng. 13. Selected readings in the Georgian, Victorian and Modern English periods, including contemporary English and American writers. Three hours. Second semester.

Prerequisite: Eng. 13. Three units.

PUBLIC SPEAKING

11. Fundamentals of Expression. A short course in expression intended primarily for students in the College of Engineering. Fundamentals of expression; the speaking voice; expressive movement; impersonation; interpretation. Each student must report on memorized work at each class. One hour. First semester. One unit.

GENERAL ENGINEERING

G. E. 1. Mechanical Drawing. Freehand lettering. Use of instruments. Plane problems. Freehand sketching. Orthographic, isometric and cabinet projections. Tracing and blue printing. French's Engineering Drawing. Six hours Drawing. First semester. Two units.

G. E. 2. Descriptive Geometry. Orthographic projection of points, lines, planes, warped surfaces, etc., in the four angles of projection. Intersections. Tangents to curves and surfaces. Developments. Practical problems in stereotomy, surveying, architecture, belting, layouts, etc. Cutter's Practical Descriptive Geometry. One hour Lecture, four hours Drawing. Second semester.

Prerequisite: G. E. 1. Two units.

G. E. 7. Technical Mechanics. General theories and principles concerning matter, inertia, space and time, motion, velocity and acceleration. Momentum. Force. Measures. Comparison and representation of force. Static: Composition and resolution of concurring forces. Conditions of equilibrium. Composition and resolution of forecasting on a rigid body. Center of gravity. Friction. Virtual velocities. Machines. Funicular polygon. Attractions. Rectilinear and curvilinear motion. Kinetics. Laws of motion. Motion under the action of a variable force, and a resisting medium. Central forces. Constrained motion. Impact. Work and energy. Moments of inertia. Rotary motion. Motion of a system of rigid boilers in space.

Effort is made throughout the course to direct the attention of the student to practical application of mathematical deducions. This course must accompany Physics 11-14. Poorman's Applied Mechanics. Four class hours. First semester.

Prerequisite: Math. 13. Four units.

G. E. 8. Technical Mechanics. Continuation of G. E. 7. Text as in G. E. 7. Four class hours. Second semester.

Prerequisite: G. E. 7. Four units.

G. E. 9. Review of Engineering Industries. Lectures and assigned reading on Engineering studies and work. This course is designed to teach the student how to study and to enable him to make a rational choice of a course of study. One class hour. First semester. One unit.

G. E. 9a. Review of Engineering Industries. Continuation of G. E. 9. One class hour. Second semester. One unit.

G. E. 109. Mechanics of Materials. Resistance and elasticity of materials. Pipes, cylinders and riveted joints. Simple and cantilever beams. Restrained and continuous beams. Columns, shafts and girders and their design. Torsion in shafts. Combined stresses. Strength and resilience of materials. Tension and compression. Flexure of beams. Shear and torsion. Apparent and true stresses. Plates, spheres and columns. Analytical and graphical methods used in the solution of problems. Seeley's Resistance of Materials. Five class hours. First semester.

Prerequisite: Math. 5 and G. E. 8. Five units.

G. E. 110. Materials Testing Laboratory. Tests of iron, steel, wood and concrete in tension, compression, shear, bending and torsion. Rattler tests on brick, and standard tests on road materials. Text: Hatt & Schofield's Laboratory Manual of Testing Materials. Three hours Laboratory. First semester.

Prerequisite: Must be taking G. E. 109. One unit.

G. E. 121. Hydraulics. Fundamental data. Hydrostatics. Theoretical hydraulics. Instruments and observations, especially meters and pressure gauges. Flow through orifices. Flow over weirs. Flow through tubes and pipes. Flow in conduits. Flow in rivers. Water-supply and water power. Dynamic pressure of water. Water wheels. Overshot, breast, undershot, vertical impulse, horizontal impulse and downward flow impulse wheels. Special forms of wheels. Turbines. Classification. Theory and design of turbines. Downward-flow and impulse turbines. Special devices. Naval hydro-mechanics. Pumps and pumping. Force and centrifugal pumps. Pumping engines. Other kinds of pumps. Pumping through pipes, and through hose. Hydraulic motors. Hydraulic-electric analogies. Stress is laid upon the effect of hydraulic laws upon engineering construction or under water, especially in problems involving the impounding of water or oil. Daugherty's Hydraulics. Four hours Lecture, three hours Laboratory. Second semester. Five units.

G. E. 127. Seminar. Reading and reports from current Engineering literature. One class hour. Second semester. One unit.

G. E. 131. Estimates and Specifications. Principally a lecture course, but supplemented by practical problems for which estimates and specifications must be submitted. Position of engineer in construction. Duties. Estimates. Corrections. Latitude allowed. Contracts. General kinds. Special. Specifications. Definiteness. Lectures on laws of contracts. Kirby's Elements of Specification Writing. Two class hours. Second semester. Two units.

GEODESY

126. Geodesy and Astronomy. Class, field and observatory work. Methods of field work to obtain accurate results. Construction, use and correction of errors in instruments. Observatory determination of latitude, longitude, azimuth and time. Field work in determining parallels and meridians. Latitude and azimuth. Transit, altazimuth and sextant, and their use. Solar transit. Triangulations and adjustments. Compass variations. Especial attention is directed to the use and correction of engineering instruments and their adaptability to astronomical use. Crandall's Text Book on Geodesy and Least Squares. Two hours Laboratory. First semester. One unit.

GEOLOGY AND MINERALOGY

Geology 33. A course in dynamical, structural and historical Geology. Particular attention is paid to structural Geology and the influences of Constructive and Engineering conditions. The student is made familiar with different stones by illustrating each recitation with specimens of the particular rocks treated, as well as their adaptability in construction, method of occurrence, etc. Ries and Watson's Engineering Geology. Three class hours. First semester.
Three units.

Geology 34. Mineralogy. A course in Mineralogy with access to a large collection of specimens. Determination of unlabeled specimens. Crystallography. Blowpipe analysis. Includes a short course in Metallurgy. Iron ores and production of iron and steel. Percentage and effect of sulphur, silicon manganese and carbon in iron and steel. Coals, coke, carbons and ash. Text as in 1. Three class hours. Second semester.
Prerequisite: Geology 1. Three units.

LAW

111. Business Law. A brief course in Contracts, Sales, Negotiable Instruments, Real Estate, Partnership, Corporations and such other subjects as may be selected. Allen's Business Law for Engineers. One class hour. Second semester. One unit.

MATHEMATICS

11. Algebra. Complete Algebra to include quadratic equations; then more particularly: ratio and proportion, progressions, imaginary and complex numbers, indeterminate equations, binomial theorem, variables and limits, inequalities, interpretations of results, logarithms, permutations and combinations, undetermined coefficients, determinants and graphic algebra. Brenke's Advanced Algebra and Trigonometry. Three class hours. First semester. Three units.

12. Trigonometry. Development of general formulae. Functions and their relations. Logarithms and their uses. Properties of triangles. Application of principles to practical problems in right and oblique triangles. Navigation in plane trigonometrical problems. Spherical trigonometry. Application to problems in astronomy and spherical mensuration. Brenke's Advanced Algebra and Trigonometry. Two class hours. First semester. Two units.

13. Analytic Geometry. Loci. Lines. Circle. Different systems of co-ordinates. Conic sections. Supplementary proportions. Loci of second order. Plane curves of higher order. Solid analytical geometry, especially of revolution. General equations. Riggs' Analytic Geometry. Five class hours. Second semester.

Prerequisite: Math. 11 and 12. Five units.

14. Calculus. Fundamental formulae and principles for differential and integral calculus. Maxima and minima. Curvature. Surfaces. Volumes. Intermediate forms. Envelopes. Series Expansion. Forms of integration. Practical application. Townsend and Goodenough's Calculus. Five class hours. First semester.

Prerequisite: Math. 13. Five units.

15. Calculus. Continuation of 14. Five class hours. Second semester.

Prerequisite: Math. 14. Five units.

116. Differential Equations. Analysis and deduction of formulae and equations used in physics, mechanics and engineering problems. Applications of formulae and equations given in engineering handbooks to problems. Practical problems and lectures. Campbell's Differential Equations. Two class hours. Second semester.

Prerequisite: Math. 15. Two units.

117. Method of Least Squares. Study of the principles and methods. Application to problems. Merriman's Method of Least Squares. Two class hours. Second semester. Two units.

MECHANICAL ENGINEERING

M. E. 3. Kinematics. Motion, velocity and acceleration of machine parts. Rolling cylinders and cones. Lobed wheels. Belts. Levers, Cams, Linkwork. Gearing. Parallel and straight line motion. Intermittent linkwork. Aggregate combinations. Keown's Mechanism and James and Dole's Mechanism of the Steam Engine. Two class hours. First semester.

Prerequisite: G. E. 1. Two units.

M. E. 4. Machine Drawing. Language of Mechanical Drawing. Conventional method of representing bolts, screws and other standards. Piping. Designing and detailing simple parts to take tension, compression and shear. Study of different methods of drawing and dimensioning found on commercial working drawings. Accuracy, completeness and speed are required. French's Engineering Drawing. One hour Lecture, six hours Drawing. Second semester.

Prerequisite: M. E. 3. Two units.

M. E. 10. Shopwork—Woodworking. Use and care of tools. Layout of work from blueprints. Shop clerical work and time study. Forging. Hardening and tempering. Characteristics of different grades of iron and steel. Patternmaking. Theory of patternmaking and moulding. Characteristics of commercial patterns. Shop visits. First semester. Six hours laboratory. Two units.

M. E. 11.—Shopwork—Foundry. Floor and bench moulding. Castings of brass, bronze and alloys. Core making. Composition of castings. Machine shop practice. Operation and care of metal working machinery. Time study and cost analysis. Shop visits. Second semester. Six hours laboratory. Two units.

M. E. 12. Shopwork. Foundry practice. Floor and bench moulding. Casting of brass, bronze and alloys. Dry and green sand core work. Core making. Shop visits. Tate & Stone's Foundry Practice. Three hours Laboratory. First semester.

Prerequisite: M. E. 11. One unit.

M. E. 13. Shopwork. (a) Patternmaking. Continuation of M. E. 11.

(b) Advanced practice in all types of woodpatterns and core boxes. All layouts from working drawings.

(c) Machine shop practice. Operation and care of metal working machinery. Machining, drilling, chipping and filing. Calipering, gauging and fitting. Assembling and rigging. Shop visits. Three hours Laboratory. Second semester. One unit.

M. E. 15. Mechanical Engineering Laboratory—Method of Investigation. Accuracy of numerical calculations. Measurement of pressure. Measurement of temperature. Determination of moisture in steam. Planimeters. Dynamometers. Testing of lubricants. Moyer's Power Plant Testing. First semester. Six hours laboratory. Two units.

M. E. 105. Machine Design—Selection of Materials for Machine Parts. Proper working stresses for different materials under dead, repeated and reversed loads. Determination of nature and distribution of stresses in each element of a machine. Design and details of a simple machine. Six hours laboratory First semester. Two units.

M. E. 106. Machine Design—Friction. Figuring weight and cost of manufacture. Kinematic layout of a machine for functional operation. Design and layout and detailing of a hand press. Six hours laboratory. Second semester. Two units.

M. E. 107. Machine Design—The Evolution of a Design from Preliminary Sketch to Complete Working Drawing. Study of symmetry, ease of operation and repair, depreciation and cost of manufacture. Design and working drawings of a power driven punch press. Six hours laboratory. First semester. Two units.

M. E. 107a. Machine Design—Continuation of M. E. 107. In this course the design begun in M. E. 107 is completed. Six hours laboratory. Second semester. Two units.

M. E. 108. Power Plant Design. Sites. Comparison of high-speed engines. Corliss engines, steam turbines and gas engines. Cost and adaptability of different types of steam boilers. Condensers.

Economizers. Superheaters. Pumps. Stokers. Piping. Complete layout of a plant with specifications and advertisements for bids. Fernald and Orrok's Power Plants. Six hours Drawing. First semester. Two units.

M. E. 114. Shopwork. (a) Machine shop practice. Continuation of (b) M. E. 13.

(b) Shop management. In this course the student is given certain tasks and shopwork assignments to carry out and oversee. The system involves Managing, Planning, Routing, Stock and Tool Room methods, Production and Time Records, and actual supervising and handling of lower classmen. Shop visits. Lectures. Three hours Laboratory. First semester.

Prerequisite: M. E. 13. One unit.

M. E. 114a. Shopwork. Continuation of M. E. 114. Three hours Laboratory. Second semester. One unit.

M. E. 116. Mechanical Engineering Laboratory—Engine Indicators and Reducing Motions. Flow of fluids. Calorific value of fuels, solid, liquid and gaseous. Flue gas analysis. Calibration of instruments. A. S. M. E. codes for testing power plant equipment. Moyer's Power Plant Testing. Second semester. Three hours laboratory. One unit.

M. E. 117. Mechanical Engineering Laboratory. Internal combustion engine tests, both Diesel and Otto Cycle engine tests. Boiler tests. Steam engine tests. Refrigeration machinery tests. Moyer's Power Plant Testing. First semester. Six hours laboratory. Two units.

M. E. 117a. Mechanical Engineering Laboratory. Turbogenerator tests. Condenser tests. Tests of complete power plants. Analysis of cost of power in commercial plants. Moyer's Power Plant Testing. Six hours laboratory. Second semester. Two units.

M. E. 118. Heat Power—Sources of Power. The internal combustion engine. Principles of combustion. Work and power. Heat and work. The Otto Cycle. The Diesel Cycle. Actual performance of internal-combustion engines. The steam-power plant. Steam. Steam-engine performance. Norris and Therkelsen's Heat Power. Two class hours. First semester.

Prerequisite: Physics 13 and 14. Two units.

M. E. 119. Heat Power—Steam-Engine Mechanisms. The steam turbine. Condensing equipment. Steam boilers. Boiler fuels and furnaces. Boiler accessories and auxiliaries. Boiler performance. Norris and Therkelsen's Heat Power. Three class hours. Second semester.

Prerequisite: M. E. 118. Three units.

M. E. 120.—Thermodynamics—Properties of Steam. Law of Conservation of energy. Simple thermodynamic processes of steam. Available energy for unheated engines. Ideal steam cycles. Perfect gasses. Compressed air. Perfect gas cycles. Available energy and thermal efficiency. Refrigeration and evaporation. The second law of thermodynamics. Flow through nozzles, venturi tubes and orifices. Fernald's Elements of Thermodynamics. Three class hours. First semester.

Prerequisite: M. E. 119. Three units.

M. E. 121. Internal Combustion Engines and Automobiles. The theory and design of gas, gasoline and oil engines, gas producer practice; the combustion of gaseous fuels. Streeter's Internal Combustion Engines. Two class hours. First semester.
Prerequisite: M. E. 120. Two units.

M. E. 122. Hydraulic Motors. Action of water on curved vanes. Forces developed and effect of impact. Work done. Centrifugal action. Reaction turbines. Vane form and arrangement. Axial, radial and mixed flow wheels. Losses due to friction, shock, leakage and residual velocity. Impulse turbines. Experiments with turbines of various types. Governors. Centrifugal pumps. Theory. Radial and curved vanes. Velocity of flow. Volute. Diffuser. Guide vanes in diffuser. Impeller passages. Balancing. Losses. Efficiency. Selection and arrangement of water-wheels. Governors and auxiliary apparatus. Relation between available water supply, possible output and perfection of development work. Draft tubes. Stop valves. Gates. Vacuum and pressure relief standpipes. Analysis of typical installations. Water power costs. Daugherty's Hydraulic Turbines. Two class hours. Second semester.
Prerequisite: G. E. 121. Two units.

M. E. 123. Industrial Engineering. The economic element in shop processes. Conditions for most economic production. Functional operation of machine tools. Limits of economic production. Machines for performing specific operations. Time study. Labor saving devices in the shop. Distribution of cost of machine production between different processes, power, labor and material. Fixed charges. Layouts of shops for most direct production. Layout of system of management and cost determining system. Diemer's Factory Organization and Administration. Two class hours. First semester.
Prerequisite: M. E. 13. Two units.

M. E. 124. Industrial Engineering. Continuation of M. E. 123. Galbreith's Time Study. Three class hours. Second semester.
Prerequisite: M. E. 123. Three units.

M. E. 125. Heating and Ventilation. Theory and design of the various systems for heating and ventilating buildings, including Hot Air, Hot Water, Steam and the plenum and vacuum systems and central station heating. Hoffman's Handbook for Heating and Ventilating Engineers. Two class hours. First semester. Two units.

M. E. 126. Heating and Ventilation. Continuation of M. E. 125. Two class hours. Second semester.
Prerequisite: M. E. 125. Two units.

M. E. 170. Thesis and Seminar. Original investigation of some Engineering problem. Two units.

PHILOSOPHY

111. Logic. The reasoning faculties and processes. Law of thought. Truth. Certitude. Doubt. False Systems. Three class hours. First semester. Three units.

112. Ontology, Psychology. Being, its origin, development, explanation. Life, its origin and kinds. Origin of Species. Darwinism. Huxley. Haeckel. The Soul, its origin and spirituality. Three class hours. Second semester. Three units.

113. Theodicy. God, His existence, nature and attributes. Creation. Providence. Miracles. Three class hours. First semester. Three units.

114. Ethics. Right and Wrong. Natural Law. Sanction of Law. False forms of Morality. Worship. Homicide. Suicide. Dueling. Society. Marriage. Divorce. Socialism. Theories of Government. Suffrage. Liberty of the press. Church and State. Three class hours. Second semester. Three units.

PUBLIC SPEAKING

Described under courses in English.

RELIGION

11. Essentials of Christian Doctrine. Various Creeds. The Apostle's Creed. Each Article of the Creed is studied in particular, attention being given to any subject bearing directly on these articles, as Sin, the Powers of the Church, Infallibility, etc. Two hours. First semester. One unit.

12. Essentials of Christian Doctrine. The Law of God. What is commanded or forbidden by the Decalogue is studied in detail. The Precepts of the Church, Grace, Prayer, and each of the Seven Sacraments together with collateral subjects. Two hours. Second semester. One unit.

13. Christianity a Revealed Religion. What Religion is. What Revelation is. Kinds of revelations. What revelation necessary to know truths about human knowledge. Man's attitude toward Revelation. Primitive, Patriarchal, Mosaic Revelation. The Divine origin of Pre-Christian Revelation. The Christian Revelation—its origin, evidences of the divinity of its origin. Two hours. First semester. One unit.

14. The Church. The Dispenser of the Christian Religion. Institution of the Church. End of the Church. Constitution of the Church. Marks of the Church. The teaching office of the Church. Sources of the Church's teaching. The Rule of Faith. Two hours. Second semester. One unit.

111. God, the Author and Restorer of Our Salvation. The existence, nature and attributes of God. The Divine Trinity. God, the creator of the universe. Various grades of creation. The spiritual and material world. Man. Relation of different orders of creation to one another. God, the Redeemer of fallen man. Decree and plan of redemption. The Redeemer—one person and two natures. The work of redemption. Two hours. First semester. One unit.

112. The Plan of Redemption as Realized in Individuals. Grace, actual, habitual or sanctifying. The Sacraments as a means of Grace. The Sacraments are studied in general—their matter and form; their efficacy and the dispositions requisite to receive them validly and with fruit. Then each Sacrament is studied in detail. The Church as a means of Salvation. The four last things. Two hours. Second semester. One unit.

113. Christian Morals in General. Law as the objective norm of human actions. Conscience as the subjective norm of human actions.

The conditions of morality. Moral good and moral evil. Two hours. First semester. One unit.

114. Christian Morals in Particular. The Christian's duties toward God—Faith, Hope, Charity. Religion. Direct and indirect acts of worship. The Church as the controller of religious worship. Duties towards ourselves and our neighbor—general and particular. Works of Supererogation or Christian Perfection. Two hours. Second semester. One unit.

SCIENCE

CHEMISTRY

1. General Inorganic Chemistry. Review of elementary principles and properties of the more important elements with their compounds. Includes a systematic study of important theories. Two hours Lecture. First semester. Two units.

2. General Inorganic Laboratory. Laboratory course to accompany Chemistry 1. Six hours laboratory. First semester. Two units.

3. General Inorganic Chemistry. An elementary course in the fundamentals continuing Chemistry 1. Two hours lecture. Second semester.

Prerequisite: Chemistry 1, 2. Two units.

4. General Inorganic Chemistry Laboratory. A laboratory course to accompany Chemistry 3. Six hours laboratory. Second semester.

Prerequisite: Chemistry 1, 2. Two units.

13. Qualitative Analysis. A study of the principles of Analytical Chemistry. This course includes the descriptive chemistry of the metals. Two hours lecture. One semester.

Prerequisite: Chemistry 3, 4. Two units.

14. Qualitative Analysis Laboratory. Dry and wet Analysis. Fundamental work in preparation for Quantitative Analysis. Six hours laboratory. One semester.

Prerequisite: Chemistry 3, 4. Two units.

21. Organic Chemistry. A study of the compounds of carbon and their derivatives. The properties of the more important compounds are discussed; special attention is given to the alphatic series. Two hours lecture. First semester. Two units.

22. Organic Chemistry Laboratory. Laboratory course accompanying Chemistry 21. The typical cyclic and acyclic compounds are prepared and their properties investigated. Six hours laboratory. First semester. Two units.

23. Organic Chemistry. A continuation of Chemistry 21. Two hours lecture. Second semester. Two units.

24. Organic Chemistry Laboratory. A continuation of Chemistry 22. Six hours laboratory. Second semester. Two units.

101-102. Quantitative Analysis. Gravimetric and volumetric analysis. The work is regarded as preliminary training for more advanced work. Special attention is given to stoichimetrical relations

and the application of the fundamental laws of chemistry to qualitative analysis. One hour lecture, nine hours laboratory. First semester.

Prerequisite: Chemistry 21, 22. Four units.

103-104. Physical Chemistry. Lectures covering the field of physical chemistry, with special emphasis upon the applications to biology; laboratory work consists of exercises in the practice of physical-chemical measurements. Two hours lecture, six hours laboratory. One semester.

Prerequisite: Chemistry 101-102. Four units.

105. Industrial Chemistry. Various industrial plants in this vicinity, using chemical engineering processes, are visited and reports are written concerning the process. The inspection tours are made weekly, as arranged, and one class hour, as arranged, is devoted to the discussion and criticism of the written report.

Prerequisite: Chemistry 103-104. Two units.

170. Seminar. Principally thesis work with discussion of assigned topics in theoretical and applied chemistry. Four units.

PHYSICS

11. Mechanics, Molecular Physics, Sound. General principles of matter. General properties of Bodies. Equilibrium. Gravity. Pendulum. Properties peculiar to Solids. Capillarity. Hydro-dynamics. The properties of gases. Aerodynamics. Two hours lecture. Second semester. Carhart's College Physics. Two units.

12. Wave Motion, Sound, Light. Production, propagation and reflection of sound. The physical theory of music. Transmission, velocity and reflection of light. Mirrors. Lenses. Dispersion and achromatism. Optical instruments. The eye. Double refraction. Interference and polarization. Carhart's College Physics. Two hours lecture. First semester. Two units.

13. Physical Laboratory. Laboratory course to accompany Physics 11. Six hours laboratory. First semester. Two units.

14. Heat, Magnetism, Electricity. Properties of magnetism. Laws of magnetic action. Terrestrial magnetism. Quantitative laws of electric action. Distribution. Electrostatic induction of influence. Electric machines. Condensation of electricity. Voltaic cell. Its modifications. Magnetic field due to current. Galvanometers. Ohm's law. Conversion of electric energy into heat. Thermo-electricity. Electrodynamics. Electro-magnets. Magnetism of iron. Telegraphy. Electromagnetic induction. Passages of electricity through gases. Magneto and dynamo-electric machines. Diamagnetism. Connection between electricity and light. Carhart's College Physics. Two hours lecture. Second semester.

Prerequisite: Physics 11, 12. Two units.

15. Physical Laboratory. Laboratory course to accompany Physics 13. Six hours laboratory. Second semester.

Prerequisite: Physics 11, 12. Two units.

104. Electric Measurements. A laboratory course in Electrical Engineering. Three hours laboratory. One semester.

Prerequisite: Physics 13, 14. One unit.

For additional work in Physics see the College of Liberal Arts, Department of Physics.

COLLEGE OF LAW

COLLEGE OF LAW

INTRODUCTION

The purposes of the College of Law are:

To give a thorough training in the fundamental principles of English and American law, and the modification thereof peculiar to the State of California;

To guide the student by actual practice in office work and court procedure to a proper application of the principles of law to concrete cases;

Finally, to imbue the student with the correct ethical principles that should govern the legal profession.

The method of instruction followed in the Case System—an exact discussion of the cases presented in the best manuals with a view to deriving the principles which have determined their decisions. This study of rules and principles is never lost sight of by the professor and is rigidly exacted from the student in all examinations.

Lectures on particular phases of the law are given from time to time by the Faculty and by occasional lectures.

Thorough courses in Philosophy and Political Science, covering a period of three years, are offered by the University in the College of Liberal Arts.

All law students who are candidates for the Degree of Bachelor of Arts or its equivalent are required to follow these courses.

Other law students are urged to do so but not obliged.

The Faculty strongly recommend all students to take advantage of these courses because they are of great value in developing the reasoning faculties and in grounding the student in sound principles of ethical conduct—two things absolutely necessary to the soundest and highest success in the legal profession.

The College of Law maintains a system of practice courts which is modeled essentially on the California system of courts of record, and is presided over by a member of the Faculty.

The court holds weekly sessions at which business is transacted in the manner usual before state courts, with the constant instruction, advice and correction of the presiding judge. On given statements of fact, student counsel issue, serve and return regular processes, prepare and file the proper pleadings according to the California Code practice, argue demurrers, impanel juries, examine witnesses, and in brief, carry their cases through from summons to final judgment.

No student in the College of Law is allowed to take the State Examination for admission to the Bar before he has completed successfully the course of study prescribed by the University for the LL. B. degree or the Certificate in Law, and until such successful completion of the course has been certified to by the Dean of the College of Law and by the Dean of the Faculties. Immediate exclusion from the College of Law will follow any violation of this regulation.

ENTRANCE REQUIREMENTS

The College of Law is open to the following classes of students:

1. Those who have the degree of Bachelor of Arts, Bachelor of Science, or their equivalent, from this or some other college or university.

2. Those who have completed the first three years of college work either at this University or at some other college or university offering satisfactory courses leading to academic degrees. Students of this class may complete their college work by following the Senior courses in Philosophy in the College of Arts and Sciences, and thus receive the degree of Bachelor of Arts or Science at the end of their first year in the College of Law, and the degree of Bachelor of Laws at the end of the third.

Students of the first and second classes are **regular students.**

3. Graduates of approved high schools with credits of recommended grade whose experience in business or whose private study has made up for their lack of collegiate training and whose maturity and seriousness fit them, in the discretion of the Faculty, for the study of law. Such are, for example, young men employed in insurance and real estate offices, banks, railroad offices and law firms, as well as those who have studied privately and so acquired knowledge for which, because of its variety and mode of acquisition, educational institutions are unable, as a rule, to give credit. These are **special students.** The number to be admitted each year is limited by the ruling of the Association of American Law Schools.

Advanced Standing. Any person who has been in regular attendance for at least one academic year at another law school, having similar admission requirements, may in the discretion of the Faculty of the College of Law, and on such terms, with or without examination, as it may prescribe, receive credit for the work done at such other law school not exceeding in any case two years. The last year must be spent in residence in the College of Law. Such transfer students must present a transcript of record showing an average of 80 per cent or better in their previous legal studies. Otherwise they will be placed on probation during the first semester of attendance.

REQUIREMENTS FOR GRADUATION

In order to graduate or receive the certificate, the student must have completed the regular course of three years of the College of Law. This implies:

1. Credit for at least seventy-two units in the College of Law (a unit is the equivalent of one hour a week for one semester). No one is allowed a unit in any course at which he has not been present ninety per cent of the class hours, and in which his average is not at least of C grade. All courses in the College of Law are prescribed courses.

2. Fulfillment of the requirement of residence in a standard law school, the last year of which must be spent in this College of Law.

3. The submission of a satisfactory thesis on some legal question selected by the student and approved by the Faculty.

The thesis must contain not less than five thousand words.

It must represent original work and thought, and consist of a thorough discussion of the cases bearing upon the subject, and must

not be a mere series of extracts from cases or treatises, loosely strung together. Pertinent authorities must be cited by giving the volume and page, and also the particular case referred to. In addition to the ordinary citation, the writer should also give the place where the same case may be found in the selected case series and the Reporter System. It must be in typewriting on paper 8½x11 inches in size.

The submission of an acceptable thesis is an absolute prerequisite to admission to final examinations.

4. In addition to the above requirements, candidates for the Juris Doctor degree must pass all required tests in Roman Law, International Law, and the History of English Law.

Having thus qualified for graduation, the student will be given either the Degree of Juris Doctor (J. D.), the Degree of Bachelor of Laws (LL. B.), or a certificate stating that he has satisfactorily completed the course in legal subjects given in the College of Law.

The Degree of **Juris Doctor** will be conferred upon the following classes of students providing they have complied with Section 4 of the conditions of graduation:

1. Those who entered with the degree of A. B. or B. S., or their equivalent, from this University or another college or university of recognized standing.

2. Those who, having entered with credit for the first two years of college work, have completed the course in Philosophy and Political Science along with their legal studies and have received the degree of A. B. or its equivalent from this University.

The Degree of **Bachelor of Laws** will be conferred upon the following classes of students:

1. Those possessing other academic degrees as just explained, who have not complied with Section 4 of the conditions of graduation.

2. Those who, having entered after the completion of the first three years of college work, have confined themselves to law, and have maintained throughout their course an average grade of B in each subject separately.

3. Those who, having entered after the completion of the first three years of college work, have done satisfactory work in some subjects included in the courses of Philosophy and Political Science, such work being insufficient to warrant conferring on them the degree of A. B. or its equivalent, and who have, in addition, maintained throughout their course an average grade of C in every legal subject. Where a student has done such work, but, while reaching a passing mark, has fallen below said average grade of C in every legal subject, he may nevertheless be awarded the degree of Bachelor of Laws by special action of the Faculty, the degree of allowance made him being proportioned to the number of hours' work satisfactorily done in Philosophy and Political Science.

The **Certificate** will be conferred upon the following classes of students:

1. Special students who have throughout their course maintained an average grade of B in every legal subject.

2. Special students who in addition to their work in law have done satisfactory work in the courses in Philosophy and Political Science or some subjects included therein, and who have also maintained an average grade of B in every legal subject. Where a student has done such work, but while reaching a passing mark has fallen

below said average grade of B in every legal subject, he may nevertheless be awarded the certificate, by special action of the Faculty, the degree of allowance made him being proportioned to the number of hours' work satisfactorily done in Philosophy and Political Science.

PRIZES

The American Law Book Company Prize. A set of law books awarded to the student in the course of Legal Research having the highest average.

The Bancroft-Whitney Company Prize. A set of law books awarded to the member of the Senior year having the highest average.

DESCRIPTION OF COURSES

Prelegal Requisites

101-102. Elementary Law. This is an elementary course required for all advanced courses in the College of Law. Robinson's Elementary Law. Three hours. Both semesters.
Prerequisite: Junior standing. Six units.

Advanced Courses

First Year

103. History of Law. A course intended to give the students a general idea of the development of law from the earliest times to the present day. Two hours. Second semester. Two units.

104. Legal Research. "Law Books and their Use." One hour. First semester. One unit.

105-106. Contracts. Huffcut & Woodruff's Cases in Contracts. Three hours. First semester. Five hours. Second semester. Eight units.

107. Criminal Law. Sayre's Cases in Criminal Law. Two hours. First semester. Two units.

108. Criminal Law and Procedure. Sayre's Cases in Criminal Law, supplemented by Fricke's Outline of California Procedure. A continuation of Course 107. Two hours. Second semester. Two units.

109. Personal Property. Warren's Cases. Three hours. Second semester. Three units.

110. Torts. Keigwin's Cases in Torts. Three hours. First semester. Three units.

111. Agency. Huffcut's Cases. Three hours. First semester. Three units.

Second and Third Years

202. Bailments and Carriers. Goddard's Cases. Three hours. First semester. Three units.

203. California Practice. Lectures, Code of Civil Procedure of California, and Selected California Cases. Two hours. Second semester. Two units.

204. Code Pleading. Sunderland's Cases, supplemented by syllabus of Professor. Three hours. Second semester. Three units.

205. Common Law Pleading. Sunderland's Cases. Three hours. First semester. Three units.

206. Conflict of Laws. Humble's Cases. Two hours. First semester. Two units.

207. Constitutional Law. Long's Cases. Two hours. Both semesters. Four units.

208. Damages. Bauer's Cases. Two hours. First semester. Two units.

209. Domestic Relations. Madden's Cases. Two hours. Second semester. Two units.

210. Equity. Throckmorton's Cases. Two hours. First semester. Two units.

211. Evidence. Wigmore's Cases. Four hours. Second semester. Four units.

212. Extraordinary Remedies. — — Two hours. First semester. Two units.

213. Legal Ethics. Jessup: Professional Ideals of the Lawyer. One hour. First semester. One unit.

214. Municipal Corporations. — — Two hours. Second semester. Two units.

215. Negotiable Instruments. Britton's Cases. Three hours. Second semester. Three units.

216. Partnership. Gilmore's Cases. Two hours. Second semester. Two units.

217. Private Corporations. Canfield & Wormsers' Cases. Four hours. Second semester. Four units.

218. Real Property. Finch's Cases. Four hours. First semester. Four units.

219. Sales. Burdick's Cases. Two hours. Second semester. Two units.

220. Trusts. Costigan's Cases. Two hours. Second semester. Two units.

221. Water Rights. — — Two hours. First semester. Two units.

222. Wills & Probate. Costigan's Cases. Three hours. First semester. Three units.

223. Community Property. Two hours. First semester. Two units.

224. Suretyship. Two hours. First semester. Two units.

All students taking Law are required to attend without credit all sessions of the Practice Court of the College of Law and all special lectures given during the scholastic year.

PRE-MEDICAL DEPARTMENT

PRE-DENTAL DEPARTMENT

PRE-MEDICAL DEPARTMENT

INTRODUCTION

This course, extending over three years, is designed to comply with the requirements of the best medical schools in the United States, and to give the student a preliminary laboratory training which will familiarize him with future work.

The entrance requirements for this course are listed in the Requirements for Admission to the College of Liberal Arts and are the standard requirements of the American Medical Association.

The minimum requirements for the junior certificate for those who intend to pass to a standard medical college must include twelve units of chemistry, eight units of physics, eight units of biology, six units of English and twelve units of other non-science subjects. Students are strongly urged to take courses also in modern languages, philosophy, mathematics, additional chemistry, Latin, and history.

PRE-DENTAL DEPARTMENT

This course, extending over three years, follows in the main the schedule of courses of the three-year pre-medical program.

SCHEDULE OF COURSES

First Semester	Units	Second Semester	Units
Freshman			
English (Engl. 1)	3	English (Engl. 2)	3
Public Speaking (Pub. Spkg. 1)	1	Public Speaking (Pub. Spkg. 2)	1
Logic (Phil. 7)	3	Logic (Phil. 8)	3
Inorganic Chemistry (Ch. 1, 2)	4	Inorganic Chemistry (Ch. 3, 4)	4
Modern Language	3	Modern Language	3
General Zoology (Biol. 1, 2)	3	General Zoology (Biol. 3, 4)	3
Religion (Relig. 1)	1	Religion (Relig. 2)	1
Physical Education	½	Physical Education	½
Sophomore			
Philosophy (Phil. 15)	3	Philosophy (Phil. 16)	3
English (Engl. 5)	3	Trigonometry (Math. 2)	3
Modern Language	3	Modern Language	3
Compar. Anatomy (Biol. 5, 6)	4	Embryology (Biol. 7, 8)	4
Organic Chemistry (Ch. 21, 22)	4	Organic Chemistry (Ch. 23, 24)	4
Religion (Relig. 3)	1	Religion (Relig. 4)	1
Junior			
Ethics (Phil. 103)	3	Ethics (Phil. 104)	3
Chemistry (Chem. 101, 102)	4	Chemistry (Chem. 103, 104)	4
Physics (Phys. 1, 2)	4	Physics (Phys. 3, 4)	4
Histology (Histol. 1, 2)	4	Bacteriology (Bact. 1, 2)	4
Religion (Relig. 101)	1	Religion (Relig. 102)	1

DESCRIPTION OF COURSES

BACTERIOLOGY

1. General Bacteriology. A course of lectures and laboratory experiments on the morphology and life processes of bacteria, with some references to allied organisms. The relationship of micro-organisms to the production of disease, soil fertility, water purity and sewage will be considered. Two hours lecture. Second semester. Two units.

2. General Bacteriology Laboratory. Laboratory course to accompany Bacteriology 1. Six hours laboratory. Second semester. Two units.

BIOLOGY

1. General Zoology. An introductory course designed to lay a broad foundation of the general principles of biology as a part of a liberal education, as a preparation for the study of medicine, or for advanced work in science. Structure, life history, and physiology of typical animals are studied in the laboratory. Two hours lecture. First semester. Two units.

2. General Zoology Laboratory. Laboratory course to accompany Biology 1. Three hours laboratory. First semester. One unit.

3. General Zoology. A continuation of Biology 1. Two hours lecture. Second semester. Two units.

4. General Zoology Laboratory. A continuation of Biology 2. Three hours laboratory. Second semester. One unit.

5. Comparative Anatomy. Comparative studies of adult forms, their organs and organ systems. The laboratory work is devoted to the critical dissection of the cat and the dogfish. Two hours lecture. First semester. Two units.

6. Comparative Anatomy Laboratory. Laboratory course to accompany Biology 5. Six hours laboratory. First semester. Two units.

7. Embryology. Cell division, spermatogenesis, ovogenesis, fertilization, cleavage, gastrulation and the origin of the germ layers of various vertebrates and invertebrates. The study of the development of the different systems. The laboratory work includes a study of chick embryo living specimens, 24-72 hours of incubation. A study of chick embryo whole mounts up to 72 hours. A study of serial, cross and sagittal sections of chick embryo up to 72 hours. Two hours lecture. Second semester. Two units.

HISTOLOGY

1. General Histology. The cell. Epithelial, connective, muscle and nerve tissues. Circulatory and lymphatic systems. Alimentary tract. Digestive glands. Respiratory, urinary and genital system. Skin and its appendages. Eye, ear, senses of smell, touch and taste. Two hours lecture. First semester. Two units.

2. General Histology Laboratory. Laboratory course to accompany Histology 1. Six hours laboratory. First semester. Two units.

CHEMISTRY

1. General Inorganic Chemistry. Review of elementary principles and properties of the more important elements with their compounds. Includes a systematic study of important theories. Two hours lecture. First semester. Two units.

2. General Inorganic Laboratory. Laboratory course to accompany Chemistry 1. Six hours laboratory. First semester. Two units.

3. General Inorganic Chemistry. An elementary course in the fundamentals continuing Chemistry 1. Two hours lecture. Second semester.

Prerequisite: Chemistry 1, 2. Two units.

4. General Inorganic Chemistry Laboratory. A laboratory course to accompany Chemistry 3. Six hours laboratory. Second semester.

Prerequisite: Chemistry 1, 2. Two units.

13. Qualitative Analysis. A study of the principles of Anayltical Chemistry. This course includes the descriptive chemistry of the metals. Two hours lecture. One semester.

Prerequisite: Chemistry 3, 4. Two units.

14. Qualitative Analysis Laboratory. Dry and wet Analysis. Fundamental work in preparation for Quantitative Analysis. Six hours laboratory. One semester.

Prerequisite: Chemistry 3, 4. Two units.

21. Organic Chemistry. A study of the compounds of carbon and their derivatives. The properties of the more important compounds are discussed; special attention is given to the alphatic series. Two hours lecture. First semester. Two units.

22. Organic Chemistry Laboratory. Laboratory course accompanying Chemistry 21. The typical cyclic and acyclic compounds are prepared and their properties investigated. Six hours laboratory. First semester. Two units.

23. Organic Chemistry. A continuation of Chemistry 21. Two hours lecture. Second semester. Two units.

24. Organic Chemistry Laboratory. A continuation of Chemistry 22. Six hours laboratory. Second semester. Two units.

101-102. Quantitative Analysis. Gravimetric and volumetric analysis. This work is regarded as preliminary training for more advanced work. Special attention is given to stoichimetrical relations and the application of the fundamental laws of chemistry to qualitative analysis. One hour lecture, nine hours laboratory. First semester.

Prerequisite: Chemistry 21, 22. Four units.

103-104. Physical Chemistry. Lectures covering the field of physical chemistry, with special emphasis upon the applications to biology; laboratory work consists of exercises in the practice of physical-chemical measurements. Two hours lecture, six hours laboratory. One semester.

Prerequisite: Chemistry 101-102. Four units.

PHYSICS

1. Mechanics, Molecular Physics, Sound. General principles of matter. General properties of Bodies. Equilibrium. Gravity. Pendulum. Properties peculiar to Solids. Capillarity. Hydro-dynamics. The properties of gases. Aerodynamics. Production, propagation and reflection of sound. The physical theory of music. Three hours lecture. First semester. Carhart's College Physics. Three units.

2. Physical Laboratory. Laboratory course to accompany Physics 1. Three hours laboratory. First semester. One unit.

3. Light, Heat, Electricity. Transmission, velocity and reflection of light. Mirrors. Lenses. Dispersion and achromatism. Optical instruments. The eye. Double refraction. Interference and polarization. Properties of magnetism. Laws of magnetic action. Terrestrial magnetism. Quantitative laws of electric action. Distribution. Electro-static induction of influence. Electric machines. Condensation of electricity. Voltaic cell. Its modifications. Magnetic field due to current. Galvonometers. Ohm's law. Conversion of electric energy into heat. Thermo-electricity. Electro-dynamics. Electro-magnets. Magnetization of iron. Telegraphy. Electro magnetic induction. Passage of electricity through gases. Magneto and dynamo-electric machines. Dia-magnetism. Connection between electricity and light. Carhart's College Physics. Three hours lecture. Second semester.

Prerequisite: Physics 1, 2. Three units.

4. Physical Laboratory. Laboratory course to accompany Physics 3. Three hours laboratory. Second semester.

Prerequisite: Physics 1, 2. One unit.

PHILOSOPHY

7. Logic: Dialectics. This course is concerned mainly with the nature and acts of the mind, ideas, judgments, the syllogism, the laws of correct reasoning; induction and deduction, argumentation and proof. Three hours. First semester. Three units.

8. Logic: Critics. Truth and error, the nature, possibility, degrees, motives and criteria of certitude. Three hours. Second semester. Three units.

15. Ontology, Cosmology. Being, its origin, development and explanation. Potency and Act. Substance and Accident. Causes and their divisions. The universe and matter. Origin of the material universe. Constitution of inorganic bodies. Three hours. First semester. Three units.

16. Psychology, Theodicy. Life. Spiritual and organic life. Mechanical theory of life. The evolutionist and matter. God, His existence, nature and attributes. Creation. Providence. Miracles. Three hours. Second semester. Three units.

103. Fundamental Ethics. Treats the subject belonging to general theory, the nature of the moral act, the distinction between moral good and moral evil, moral habits, natural and positive moral law; conscience, rights and duties. Three hours. First semester.

Three units.

104. Applied Ethics. The application of the general principles of ethics to particular and social rights and obligations; the rights to property, life, honor; the rights and obligations of domestic society, marriage and divorce. Civil society; its nature and forms; the rights of civil authority. Church and state; the ethics of international relations, peace and war. Three hours. Second semester.

Three units.

ENGLISH, HISTORY, MATHEMATICS, MODERN LANGUAGES, RELIGION, PUBLIC SPEAKING, ADDITIONAL PHILOSOPHY AND SCIENCE

Courses are offered in these subjects in the College of Liberal Arts and the College of Engineering, and are open to students in the Pre-Medical Course.

THE OBSERVATORY

ASTRONOMICAL AND METEOROLOGICAL OBSERVATORIES
THE SEISMOLOGICAL STATION

***Jerome Sixtus Ricard, S. J.**
Director of Astronomical and Meteorological Observatories

James Bernard Henry, S. J.
Director of Seismological Station

Albert Joseph Newlin, B. S., LL. B., J. D.
Associate in Meteorology and Seismology

Paul J. Torelli, B. S. **Alphonse L. Buonaccorsi**
Assistants

The Astronomical and Meteorological Observatories are under the immediate direction of Father Ricard, known throughout the country as the "Padre of the Rains." In recognition of the work of Father Ricard, the Knights of Columbus of California have built the Knights of Columbus Ricard Memorial Observatory, which provides the facilities and equipment for a much more comprehensive investigation of astronomical and meteorological problems, and a correspondingly greater service to the country.

Through its Seismological Station the University is a member of a chain of seismological stations maintained by the Jesuits throughout the world, and has been a pioneer on the Pacific Coast in the recording and observation of seismological disturbances, as well as in the study of their causes.

The University Seismological Station still operates two Weichert seismographs, consisting of one vertical and two horizontal components. Recently, however, a new impetus has been given this branch of geophysical investigation by the construction of a vault embodying all that was found best and latest in stations of this type. The Seismological Station is now in possession of three new Galitzin Seismometers of the long-period type, which are located in the new vault. Provision has also been made to accommodate the two horizontal components of the Wood-Anderson Seismometers which were constructed at Pasadena for this Station. The latter have been designed for a special study of local earthquakes and are the short-period type. Finally, the University hopes to complete this station by the installaton of a "Shortt Synchronome Clock," thus assuring accurate time for all our records.

Of special prominence, however, is the work which has been done in long range weather forecasting through a study of sun spots. This line of study was instituted by Father Ricard over a generation ago and in the meantime he has built up a large mass of data in this regard, so that the records and observations at the University are perhaps the most complete of any in the country. Monthly forecasts are sent out regularly from the Observatory. With the aid of such new instruments as the 18.5-inch reflector and the spectroheliograph, Father Ricard will be enabled to pursue his researches with greater facility and success.

*Deceased December 8, 1930.

JESUIT

JUNIOR COLLEGE

AND

SEMINARY

LOS GATOS, CALIFORNIA

JESUIT JUNIOR COLLEGE

INTRODUCTORY STATEMENT

Sacred Heart Seminary, though under separate management and financially not connected with the University, is affiliated to it in its academic work, and all its courses are credited towards the obtaining of degrees. There are courses in Classics, English, Education, History and Public Speaking, open to members of the Jesuit Order only. The minimum prerequisite of academic work is the completion of standard high school requiring four years of Latin. Frequently the students have one or more years of college work to their credit before being admitted to the school. The regular course of religious and academic training comprises four years, the first two of which are largely devoted to religious exercises for the purpose of moral training and of developing those qualities of heart and character that are so important in any teacher, but most of all in the religious teacher. Study and academic instruction are not neglected, both being chiefly directed towards securing a solid foundation for the advanced work of the third and fourth years. These two years are given wholly to scholastic work. Students who are unable to do the work assigned to the last two years in a satisfactory manner and within the prescribed time are required to add another year to their course before being allowed to proceed to higher studies.

DESCRIPTION OF COURSES

History of Education

1. **Ancient Education.** Course deals with the history of primitive and oriental education. It treats also the liberal education of the Greeks and the practical training of the Romans. One unit.

2. **Early Christian and Mediaeval Education.** The course studies the struggle of the Church to introduce civilization into Western Europe, the monastic schools which were opened, the development of Scholasticism, the founding of universities in various parts of Europe. One unit.

3. **Modern Education.** The earlier systems are considered. The Renaissance in Education. The Reformation and Education. Types of Religious Schools. The Jesuit System of Education. An historical and critical study of the Ratio Studiorum. One unit.

4. **Modern Education.** Course deals with more recent systems. The work of the great educational reformers. The development of national school systems in Europe and in the United States. One unit.

Educational Method

5. **Teacher's Courses in High School English.** The rhetoric to be taught in high school, its method of presentation and its application to written composition. Graduation and development of written composition. Methods of correction, standards of valuation. The literature to be studied, the method for its presentation and study. Oral English. Two units.

English

1. **Advanced Rhetoric.** The theory of rhetoric, the study of style, and the requisites of the various species of writing. One unit.

2. **Study of Poetry.** The intellectual, imaginative and emotional elements of poetry. The technique of versification. One unit.

3. **Oratory.** Study of the oration, its sources of argument, its structure and delivery. One unit.

4. **The Drama.** The theory of the drama. Its history and development. The plot and its analysis. One unit.

5-6. **History of American Literature.** A survey course covering its chief influences and writers. Two units.

7-8. **History of English Literature.** An outline study of modern English literature. Two units.

9. **English Prose.** The essayists. One unit.

10. **English Poets.** Representative selections from the leading poets. One unit.

11. **The Orators.** A critical study of their speeches. One unit.

12. **Shakespeare.** Shakespeare's life, influence, sources of his drama; a study of his chief plays. One unit.

13. **Newman.** A study of his excellent prose. One unit.

14. **English Composition.** Narration and description. Two units.

15. **Advanced Composition.** Essay writing. Two units.

16. **Public Speaking.** (a) The fundamentals of public speaking. Training in voice, in appreciative reading and in platform speaking. One unit.

(b) A study of the formal and informal speech; training in the lecture, address and familiar instruction. Debating. One unit.

Greek

A-B Elementary Course. Etymology and syntax. Greek Reader, Anabasis. Exercises based on Xenophon. Eight units.

1. Herodotus, Xenophon, Plutarch, Basil, Syntax. Four units.
2. Chrysostom, Lucian, Homer, Syntax. Four units.
3. Demosthenes: Philippics, Olynthiacs, The Crown. Four units.
4. Sophocles: Oedipus Tyrannus, Seven Against Thebes. Four units.
5. Plato: Defense of Socrates, Phaedro. Four units.
6. Selected Greek Lyrics. Two units.
7. Simple themes on rules of syntax (Arnold's Greek Prose). Two units.
8. Advanced themes. Two units.

Latin

Latin is taught and spoken as a living language.

1. Cicero: De Senectute, Oratorical Narrations, Pro Marcello, Pro Archia, Pro Lege Manilia. Four units.
2. Virgil: Eclogues, Georgics, Aeneid. Four units.
3. Livy. Two units.
4. Ovid: Metamorphoses, Elegies. Two units.
5. Horace: Odes, Epodes, Satires, Epistles. Four units.
6. Cicero: Pro Milone, In Catilinam, Pro Ligario. Two units.
7. Tacitus: Sallust. One unit.
8. Plautus: Captivi. Two units.
9. Latin Composition. (Arnold-Bradley's Latin Prose Composition.) Two units.
10. Latin Composition. (Bradley's Aid to Latin Prose.) Original compositions. Latin prosody. Two units.

History

1-2. Ancient History. Egypt; Assyria; the Pre-Hellenic Civilizations; Greece, Rome—their civilizaton and their influence; the Migrations of the Nations. Four units.

3-4. Modern History. Age of Charlemagne; Development of the Feudal System; the Crusades; the Papacy of the Middle Ages; the Hundred Years' War; the Renaissance; the Protestant Revolt; the Wars of Religion; the period of Louis XIV; French Revolution; Industrial Revolution and the Modern Democracies. Four units.

DEGREES CONFERRED

May 17, 1930

Honorary Degrees

DOCTOR OF LAWS

Charles Egbert Stanton
Maurice T. Dooling, Jr.
Joseph G. Hooper
David Mahoney Burnett
Thomas Edward Bailly
Hunter Sherman Armstrong

Degrees in Course

JURIS DOCTOR

Peter Francis Morettini, A. B. '20, LL. B. '22*
Charles Richard Boden, B. S. '23, LL. B. '24
Harlan H. Dykes, A. B. '21, (Stanford); LL. B. '25, (St. Ignatius)
Edward Preston Murphy, A. B. '27, LL. B. '28

MASTER OF ARTS

Alvin Joseph Wolf, A. B. '28

BACHELOR OF LAWS

Ian Bruce Hunter, B. S. '28
Peter John Mancuso, B. S. '28
George Aloysius Martinelli, A. B. '28**
Fenton John McKenna, Ph. B. '28
Joseph Anthony Schenone, Ph. B. '29

BACHELOR OF ARTS

John Dennis Foley***
William James Gallagher
Daniel Thomas Murphy
Fred Robert Santana
Edgar Milton Thrift**

*Posthumous.
**Cum laude.
***Maxima cum laude.

BACHELOR OF SCIENCE

In Philosophy

James Holmes Barr, Jr.**
Theodore Oliver Cicoletti
Robert Barry Danielson
Andre P. Duque
Robert Joseph Gaddy
James Francis Good
Edward W. Greco
Wray Holman Griffith
James J. Jennings, Jr.
Arthur Hughes Kenny
Thomas Edward Mathews
George R. McDonald
Michael Philip Naughton
Arthur Edwin Prag
Walter Raley, Jr.
Salvadore M. Sanfilippo, Jr.
Joseph L. Sheaff
Philip John Sheridan

In Economics

George Albert Barsi
Emile John Bouret
William Robert Campbell
Eugene Edward Col
Timothy Patrick Connolly
Alberto Dent
John Maury Faherty
Robert Joseph Fatjo
Philip Francis Foley
Marcel Eugene Mailhebuau
John Joseph Musso
Arthur Quement
Alphonse Guy Ruettgers**
John Robert Verzi

In Physical Education

Norman D. Fawley
Clarence Martin Miller
Marvin J. Owen
Myles Francis Regan, Jr.
John Tyler Sidener
Guido Joseph Simoni
Albert J. Terremere, Jr.

BACHELOR OF CIVIL ENGINEERING

Russell Maurice Grossman
Walter Francis Koller
Frank Edward Pisano
John Joseph Pugh
Emmett H. Sheridan
Ernst E. Stohsner**

BACHELOR OF ELECTRICAL ENGINEERING

Marcellian Richard Betkouski
Donald Louis Dellwig
Jacob John Eberhard
George Ellsworth Mattos
Theodore Louis Selna**
Frank J. Somers
George William Vukota**

BACHELOR OF MECHANICAL ENGINEERING

John R. Hazlewood
James Graham McCormick
George Anthony Sherman

**Cum laude.

EXTRAORDINARY PRIZES

1930

The Nobili Medal, for the student who shall be deemed first in morals, obedience and application to study, is awarded to Timothy Patrick Connolly, '30.

The Silver Medal for Conduct and Application, for the student in residence at the University distinguished for application and conduct, is awarded to George Anthony Sherman, '30.

Distinguished: J. Francis Good, Wray H. Griffith, Arthur H. Kenny, Albert J. Terremere, Jr., John D. Mahoney, Marshall E. Leahy, Richard B. Meagher, Ronald F. Peters, Bernard C. Plover, Albert J. Ruffo, Walter M. McLaughlin, George J. Schelcher, Cable A. Wirtz, David Lubin, Joseph J. Lanza, Winston A. Keller, Edward J. Lagan, Maurice E. Link, J. Neal Clark, Jacques E. Perier, Charles P. Molinari, William V. Regan, Jr.

The Silver Medal for Conduct and Application, for the student not resident at the university distinguished for application and conduct, is awarded to John Dennis Foley, '30.

Distinguished: James H. Barr, Jr., George W. Vukota, Theodore L. Selna, Jacob J. Eberhard, Robert A. Fatjo, Eugene E. Col, Marcel E. Mailhebuau, John J. Musso, Edgar M. Thrift, Ernst E. Stohsner, Andrew J. Malovos, Jr., William J. Warren, James T. O'Keefe, Jr., Fred G. Gillick, Aldo P. Savio, Lionel W. Thorpe, J. Robert Roll, Maximino C. Boiser, Chester E. Damico, Francis D. Hillebrand, Charles F. Wilcox.

The Archbishop's Medal for Christian Doctrine, valued at $50, for the student who shall have completed most successfully an examination in Christian Doctrine, is awarded to Richard B. Meagher.

Distinguished: Bernard C. Plover, James T. O'Keefe, J. Roy Walsh.

The Orella Medal, valued at $25, for the writer of the best paper on a scientific subject, is awarded to Richard B. Meagher.

Distinguished: William J. Warren, J. Robert Roll.

The Barchi Prizes, given by Joseph M. Durney, Esq., for the best paper in Chemistry, are awarded as follows: First Prize, $15, to Richard B. Meagher; Second Prize, $10, to Walter F. Koller.

Distinguished: J. Robert Roll.

The Ryland Prizes for Debating, for excellence in the annual Ryland Debate between the Senate and the House, are awarded as follows: First Prize, $20, to Arthur H. Kenny; Second Prize, $15, to Marshall E. Leahy; Third Prize, $10, to Cable A. Wirtz.

Distinguished: Bernard C. Plover, Walter M. McLaughlin, Salvadore M. Sanfilippo, Jr.

The Dramatic Art Prize, a watch, the gift of Mr. William H. Leahy, for the winner of the Dramatic Art Contest, is awarded to Arthur H. Kenny.

Distinguished: Wray H. Griffith, Salvadore M. Sanfilippo, Jr., Warren S. Morey.

The Herman F. Budde Prize of $25 for the best paper in a sociological subject is awarded to Ronald F. Peters.

Distinguished: James T. O'Keefe, John M. Faherty, Harry I. Sullivan, James H. Barr, Jr., Frank W. Klatt.

The McCann Prize of $15 for the best short story is awarded to Charles F. Wilcox.

Distinguished: Vincent Cullinan, Jacques E. Perier, Laurence W. Carr.

The Donovan Prizes are awarded as follows:

A cash prize of $25 for the best Senior Civil Engineering Thesis is awarded "ex equo", $12.50 each, to John Pugh and Ernst E. Stohsner.

A cash prize of $15.00 for the best Junior Civil Engineering Design is awarded to Charles T. Ledden.

Distinguished: Lawrence P. O'Connor.

A cash prize of $20.00 for the best examination in Mathematics amongst the Sophomores and Freshmen of the College of Engineering is awarded to Frank M. Howell, Jr.

Distinguished: Aldo P. Savio, Thomas F. Eberhard, Manuel Escudero.

The Redwood Prize of $25 for the best essay on an historical subject is awarded to James J. Scoppettone.

The Bancroft-Whitney Company of San Francisco offers a prize for the Senior honor student in the College of Law. This prize is awarded to George Aloysius Martinelli, A. B. '28.

The American Law Book Company of Brooklyn, N. Y., offers a prize for the honor student in the course in Legal Research. This prize is awarded to Marshall Edmund Leahy, '30.

Distinguished: Alfred Ronstadt, Hugh O. Clarke, Thomas P. O'Donnell, James J. Scoppettone.

DONATIONS AND BENEFACTIONS

The President and Faculty of the University express gratitude for the following benefactions:

To the late Senator James D. Phelan for a bequest of $50,000.00 for scholarships.

To Mr. Frank Heffernan for donations to the Mission.

To a Friend of the University for the public address system in the students' dining room.

To Mr. Charles W. Slack for law books.

To Mr. Arturo Volio for a statue of St. John the Baptist for the Mission Church.

To a Friend of the University for the statue of St. Clare for the Mission Church.

To the John J. Montgomery Chapter of the Alumni Association (Oakland Council) for $400.00 for needy students.

To the heirs of the late Professor John J. Montgomery for two of the original aeroplanes and for valuable documents relating to the early research of Professor Montgomery in the field of aviation.

To Richard Montgomery for a valuable historical display of the life work of his brother, Professor John J. Montgomery.

To Mr. Frank Farry for a musical instrument.

To Mr. J. B. Peckham for law books.

To Professor Hunter S. Armstrong for a donation to the Law Library.

To Dean George L. Sullivan for a generous contribution to a fund for the Engineering Laboratory.

To Mr. Edward F. O'Day for a bound set of the Spring Valley Water Company's publication "San Francisco Water, 1922-1930".

To Mr. Noel Sullivan for the Congressional Record (bound) 1915-1921, the property of the late Senator James D. Phelan.

To Mr. Frederick Dohrmann, Jr., for the following contributions to the University Library:

Select Works of William Penn, to which is prefixed a journal of his life; 2 volumes folio, London 1781;

History of America from its discovery by Columbus to the conclusion of the Late War, with an Appendix containing an account of the Rise and Progress of the present unhappy contest between Great Britain and her Colonies (Russell); 2 volumes quarto, London 1778;

Macartney's Embassy to China (Staunton); 2 volumes quarto, London 1797;

Index to Islands of the Pacific Ocean; quarto; Honolulu 1900.

To Mr. Charles R. Boden for the following contributions to the University Library:

Our American Cardinals (Walsh);

The Book of Saints (Benedictine Monks of St. Augustine's Abbey); Ramsgate;

Poems of Gerard Manley Hopkins; edited with notes by Robert Bridges; second edition.

To the Great Northern Railway Company for the following contributions to the University Library:

The Blazed Trail of the Old Frontier (Laut);

Adventures in Alaska (Endicott);

Sign Posts of Adventure (Schultz);

Through Glacier Park (Reinhardt).

To the Hon. Arthur M. Free for books for the University Library.

To the Sisters of Charity of O'Connor Sanitarium, San Jose, for numerous favors.

To the American Law Book Company for the annual prize for the honor student in the course in Legal Research.

To the Bancroft-Whitney Company for the annual prize for the senior law student having the highest scholarship.

To the Carmelite Sisters of Santa Clara for vestments donated to the Mission Church.

To the members of the Catala Club for generous donations to the Students' Lounge Room.

To Mr. J. P. Hulsman for services.

To Dr. Fred C. Gerlach, Dr. Edward A. Amaral, Dr. A. J. Baiocchi, Dr. John Gallwey, Dr. Alexander Keenan, Dr. Rodney A. Yoell, Hon. C. C. Coolidge, Mr. Phil G. Sheehy, Mr. Victor A. Scheller, Mr. Victor A. Chargin, Dr. S. J. Saso, Mr. William J. Kieferdorf, for professional services

To His Grace Most Rev. Edward J. Hanna, D. D., for the Archbishop's Medal.

To Mr. William H. Leahy for the annual Dramatic Art Prize.

To Mr. Herman Budde for the Herman Budde Prize of 1931.

To Dr. Firmin R. Orella for the Orella Prize of 1931.

To Mr. Joseph Durney for the Barchi Prizes of 1931.

To Mr. Walter Demartini for numerous donations for the altars of the Mission.

To Joseph Rianda (deceased) for an insurance policy of $250.00 to be added to the Endowment Trust Fund.

To Mr. H. W. Bartlett for electrical machines for the Montgomery Laboratory.

To Mr. Alphonsus J. Miller for books for the Engineering Library.

To the following Alumni who have generously kept up their insurance policies in the interests of the University Endowment Fund:

Joseph Arbura
Reginald Archbold
James Bacigalupi
Archer Bowden
Richard Bressani
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John A. Corotto
Herman Dieringer
Leopold Di Fiori
Paul Donlon
William Donovan
Maurice Dooling
Francis Dowd
Thomas Feeney
Joseph Fitzpatrick
Charles Foley
Byington Ford
Ignacio Forster
John Forster
Brian Gagan
Hugh Gallagher
Rev. James Galvin
George W. Geoghegan
Frank Hennessy
Joseph Hewitt
Fred Hoedt
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Dr. Alexander Keenan
Eugene Kelly
Joseph Kelly
George Kennedy
William Kieferdorf
Emil Larrouy
John G. Liebert
Marcel Lohse
Robert V. Lohse
Robert V. Lotz
William D. Lotz
Michael Maloney
Nicholas J. Martin
Jordan Martinelli
Robert E. McCabe
Henry McGowan
William McKinnon
Cornelius L. Monaghan
Edward Nicholson
Edward E. Nino
Oliver G. Nino
Louis Normandin
Bernard J. Perry
Michael Plunkett
Ray Rudolph
Gerald Sheehy
Daniel Shellooe
Fred Sick
Orvis Speciale
Dr. George L. Sullivan
Timothy Sullivan
John H. Thompson
Dr. Joseph M. Toner
Chauncey Tramutolo
Leo Wagner
Elmer Westlake

REGISTER OF STUDENTS—1930-1931

Abbreviations Used

Arts—College of Liberal Arts.
B. A.—College of Business Administration.
C. E.—Civil Engineering.
E. E.—Electrical Engineering.
Engr.—College of Engineering.
Fr.—Freshman.
Gr.—Graduate.
Jun.—Junior.
M. E.—Mechanical Engineering.
Premed.—Premedical Department.
Sem.—Seminary.
Sen.—Senior.
Soph.—Sophomore.
Spec.—Special, not in regular course.

Abate, Angelo Louis	Soph. Arts	San Jose
Adams, John Q.	Fr. Sem.	Los Gatos
Aguilar, Pedro Edward	Fr. Arts	Santa Barbara
Aiello, Valentine	Jun. B. A.	San Jose
Alaga, Nicholas, Jr.	Fr. B. A.	Watsonville
Alcalá, Luis Adriano	Soph. Engr.	Quito, Ecuador
Allbutt, Clifford F.	Soph. Sem.	Los Gatos
Alvarado, Frank William	Soph. B. A.	Puente
Ambrosini, Wesley Clarence	Jun. B. A.	Ferndale
Angelo, Raymond Francis	Fr. B. A.	Sunnyvale
Anglemier, Vernon Frank	II Law	San Jose
Arnold, Shirley Theodore	Sen. E. E.	San Jose
Ashley, Robert Emile	Soph. B. A.	San Francisco
Axt, Milton Charles	Sen. Arts	San Francisco
Bacigalupi, Natalis A.	Fr. Sem.	Los Gatos
Badami, Anthony George	Soph. Premed.	San Jose
Bailly, Thomas Edward, Jr.	Soph. Premed.	San Francisco
Bardin, Dan G. Ph. B., Santa Clara, 1929	IV Law	Salinas
Bastanchury, Louis Anthony	Soph. Arts	Santa Barbara
Beach, Seth Gibbs	Soph. B. A.	Placerville
Beck, William August	Fr. B. A.	Milwaukee, Wisconsin
Beckrich, John Peter, Jr.	Fr. Arts	Santa Barbara
Bell, Joseph Patrick	Soph. Arts	Anchorage, Alaska
Bennett, Lewis Joseph	Arts Spec.	Sacramento
Bentzien, Forrest Llewellyn A. B., Stanford, 1930	II Law	Santa Clara
Berg, William Goodspeed	Jun. Arts	Marysville
Beverly, Code William	Fr. Arts	San Francisco
Bianco, Peter Frank	Fr. Arts	San Jose
Bickford, Robert L.	Fr. Sem.	Los Gatos
Bigongiari, Romeo Joseph	Sen. E. E.	San Jose
Birmingham, Paul Victor	Soph. Engr.	San Jose

Bischoff, Adolph	Fr. Sem.	Los Gatos
Bisordi, Charles Dominic	Jun. E. E.	Livermore
Blanchard, Hiram Daniel	Fr. B. A.	Los Gatos
Boiser, Maximino Cruzante	Jun. Arts, I Law	Argao, Cebú, P. I.
Bonacina, Joseph Andrew Ph. B., Santa Clara, 1927	IV Law	Santa Clara
Bond, Peter Reginald	Jun. Arts, I Law	Sunnyvale
Borbeck, Martin G.	Fr. Sem.	Los Gatos
Boss, Charles Morton	Fr. B. A.	Portland, Oregon
Bottaro, Frank	Fr. Arts	Sacramento
Boyd, John Adams, Jr.	Soph. Arts	San Carlos
Branson, Aloysius Joseph	Soph. Arts	Burlingame
Britschgi, Carl Aloysius	Fr. B. A.	Menlo Park
Brown, Carl Edward	Fr. B. A.	Monterey
Bui, Silvio Eugene	Fr. Arts	Redding
Bunner, Eugene McAuliffe	Jun. Arts	San Francisco
Buonaccorsi, Alphonse Lawrence	Fr. Engr.	San Francisco
Burke, Lawrence Perry	Soph. Arts	Plymouth
Burszan, John, Jr.	Soph. Premed.	San Mateo
Burton, Fred William	Fr. Arts	Yreka
Butler, John Kellogg, Jr.	Sen. B. A.	Honolulu, Hawaii
Butterworth, Harry Joseph, Jr.	Soph. Premed.	San Rafael
Byrnes, William Thomas	Fr. Arts	San Francisco
Caletti, Henry John	Soph. B. A.	Menlo Park
Callaghan, Arthur Rafael	Jun. M. E.	Burlingame
Callaghan, Leo Robert	Jun. Premed.	Livermore
Calou, Arthur Pierre	Soph. Arts	Oakland
Calpestri, Italo Amerigo, Jr.	Jun. B. A.	Alameda
Calvello, Dominic Daniel	Fr. B. A.	San Jose
Campisi, Dominic Albert	Fr. Premed.	San Jose
Cangiamila, Carmelo Victor	Fr. Engr.	San Jose
Caputo, Gregory Joseph	Jun. Arts	San Jose
Carniglia, Joseph William	Soph. Engr.	Saratoga
Carr, Edwin F.	Soph. Sem.	Los Gatos
Carr, Francis Joseph	Jun. Arts, I Law	Redding
Carr, James Kennedy	Fr. Engr.	Redding
Carr, Lawrence William	Soph. Arts	Redding
Carrese, Vincent James	Sen. Arts	San Pedro
Carroll, Clifford A.	Fr. Sem.	Los Gatos
Carroll, George E.	Soph. Sem.	Los Gatos
Casey, Vincent J.	Fr. Sem.	Los Gatos
Cassassa, Charles S.	Fr. Sem.	Los Gatos
Cassin, Robert Emmett	Jun. Arts, I Law	San Jose
Castillo, Rafael Emilio, Jr.	Fr. Premed.	Guatemala City, Guat.
Ceccarelli, Dino Louis	Jun. E. E.	South Dos Palos
Cerruti, Elmo Adolph	Sen. Science	San Jose
Chandler, Harold Maertens	Soph. Arts	Mountain View
Chimento, Lewis Lucian	Soph. Arts	San Jose
Christoph, Van F.	Soph. Sem.	Los Gatos
Cimino, Emilio Onofrio	Fr. B. A.	Madera
Cipolla, Buell William	Special	Santa Clara
Cipolla, Remo Nelson	Sen. Arts	Santa Clara
Clark, Edward Joseph	Jun. Arts, I Law	San Francisco
Clark, Melvin Bernard	Fr. Arts	San Francisco
Clarke, Hugh Oliver	Sen. Arts, II Law	Dunsmuir

Cody, Alexander John	Gr. Arts	San Francisco
Coit, Leonard Clarence	Jun. Arts	San Jose
Cole, Millard Cunningham	Jun. B. A.	Roseville
Coles, James Henry	Soph. B. A.	Phoenix, Arizona
Collins, Daniel Edward, Jr.	Soph. Engr.	San Francisco
Connors, James Joseph, Jr.	Sen. B. A.	Juneau, Alaska
Conover, Sherman Lloyd	Fr. Engr.	Cupertino
Conway, Vincent M.	Fr. Sem.	Los Gatos
Cook, Lawrence Harvey	Gr. Science	Menlo Park
A. B. Stanford, 1921; A. M., 1922		
Cooke, Harman Richard, Jr.	Fr. Arts	Reno, Nevada
Cooke, Warren Edward	Fr. Arts	Santa Ana
Corboline, Emile James	Jun. Arts	Sunnyvale
Coromina, Eduardo Escaño	Fr. Engr.	Cebú, P. I.
Corrigan, John L.	Soph. Sem.	Los Gatos
Corrigan, Maurice F.	Soph. Sem.	Los Gatos
Corsiglia, William Louis	IV Law	San Jose
Ph. B., Santa Clara, 1929		
Cotter, Donald Gregory	Soph. Arts	San Jose
Coyne, Harry James	Soph. B. A.	Port Townsend, Wash.
Croal, Thomas Bernard, Jr.	Jun. E. E.	Las Vegas, Nevada
Croney, Charles Willard	Soph. Engr.	Porterville
Crowley, John James, Jr.	Fr. B. A.	San Francisco
Cullinan, Vincent	Soph. Arts	San Francisco
Cunningham, Frank Aloysius	Sen. Arts	Los Angeles
Cunningham, William Edward	Fr. B. A.	Los Angeles
Daly, Thomas Emmett	Sen. B. A.	Jerome, Arizona
Damico, Chester Enrico, Jr.	Jun. Arts, I Law	Cupertino
Danielson, William C.	Sen. Arts, II Law	Burlingame
Danz, Fred Joseph	Fr. B. A.	Redwood City
de la Garrigue, John Louis	Sen. E. E.	Mar Vista
de la Guardia, Agustin Alberto	Fr. Engr.	Oakland
de la Guardia, Edwin Carlos	Fr. Engr.	Oakland
de la Guardia, Ricardo Alfonso	Fr. Engr.	Oakland
De Luca, Harold Joseph	Soph. Arts	San Francisco
Dempsey, John F.	Soph. Sem.	Los Gatos
Den, Alfred Aloysius	Soph. Arts	Santa Barbara
Denser, William Anthony	Soph. Arts	San Francisco
Dillon, John Talmadge	Fr. Arts	Seattle, Wash.
Dodt, James Wilton	Fr. B. A.	Phoenix, Arizona
Doetsch, Joseph Peter	Sen. M. E.	Los Gatos
Domachowski, Alphonse J.	Fr. Sem.	Los Gatos
Donovan, Milton Daniel	Fr. Engr.	San Jose
Dorsey, Edward Rowe	Soph. Premed.	Phoenix, Arizona
Dougherty, Jack Francis	Fr. Engr.	Monterey
Dowd, Bernard Gilmore	Soph. Arts	San Francisco
Dowd, James Alfred	Soph. Premed.	San Francisco
Doyle, Richard Eugene, Jr.	Soph. Arts	Santa Cruz
Drew, Edwin Clausen	Soph. Engr.	Salinas
Duckart, Alfred Michael	Soph. Arts	Modesto
Dulfer, Elbert Aloysius	Sen. Arts	San Francisco
Dunn, Bernard Joseph, Jr.	Fr. Arts	Sausalito
Duque, Bertrand Edmund	Sen. Arts	Reno, Nevada
Dussault, Arthur	Fr. Sem.	Los Gatos
Dyer, Seth Gregory	Soph. Arts	Alameda

Eachus, John Baptist	Fr. Engr.	Lakeport
Eames, James Patrick	Sen. M. E.	San Francisco
Eberhard, Thomas Francis	Jun. E. E.	Santa Clara
Erbst, Norman John	Fr. Engr.	Boise, Idaho
Escudero, Manuel	Jun. M. E.	Mexico City, Mexico
Etchebarren, John Hughes	Sen. B. A.	Reno, Nevada
Etchebarren, Peter Joseph	Sen. Arts	Reno, Nevada
Ethen, Joseph Louis	Jun. Arts	Palo Alto
Fader, Gerald J.	Fr. Sem.	Los Gatos
Farrell, Thomas Francis	Sen. E. E.	San Francisco
Farris, John Speede	Fr. B. A.	San Francisco
Ferretti, Augustine J.	Fr. Sem.	Los Gatos
Figone, Louis Attillio	I Law Spec.	San Jose
Filice, Louis	Soph. Arts	San Jose
Flaherty, Dewey Francis	Soph. Arts	San Francisco
Flajole, George Arthur	Soph. Arts	Seattle, Wash.
Flohr, Melvin Francis	Sen. Arts	Petaluma
Flynn, James Leo, Jr.	Fr. Arts	Redwood City
Foley, James William	Soph. Arts	San Jose
Foley, John Dennis A. B., Santa Clara, 1930	III Law	San Jose
Fortier, George Norton	Soph. Arts	San Mateo
Freitas, Walter Francis	Fr. Arts	San Rafael
Fretz, Paul Henry, Jr.	Fr. Premed.	Mountain View
Fuller, George John	Soph. Arts	Jackson
Gagliardo, Andrew Donald	Fr. Arts	San Jose
Gallagher, John Joseph	Fr. Arts	Fresno
Gallagher, Walter Vincent	Fr. Arts	Berkeley
Gallo, Fred John	Sen. E. E.	Santa Clara
Gangi, Peter	Fr. Premed.	San Jose
Gardiner, Thomas Robert	Fr. B. A.	Oakland
Gass, Paul Joseph	Fr. Engr.	Phoenix, Arizona
Gearin, Hugh Crane	Fr. Arts	Portland, Oregon
George, John Francis	Fr. Engr.	San Jose
Giacalone, Anthony Joseph	Fr. Premed.	San Jose
Gianelli, Virgil Joseph	Fr. Premed.	Stockton
Giannini, Dante Henry	Jun. Arts, I Law	Santa Clara
Giannini, Peter Aloysius	Sen. Arts, I Law	Santa Clara
Gillis, John Duncan	Sen. E. E.	San Francisco
Giometti, Eugene Joseph	Fr. Arts	Stockton
Girón, Felipe Antonio	Jun. E. E.	Guatemala City, Guat.
Giroux, David Edward	Soph. Arts	Winnemucca, Nevada
Giuntini, Hector Joseph	Soph. B. A.	San Francisco
Golsong, William Bernard	Fr. Engr.	Sacramento
Góngora, Edwin Porfirio	Soph. Engr.	San José Costa Rica
Good, James Francis B. S., Santa Clara, 1930	IV Law	Oroville
Gough, John Albert	Sen. Arts	San Francisco
Goux, Augustine Charles	Fr. Arts	Santa Barbara
Graham, Charles John	Jun. B. A.	San Francisco
Greco, Edward William B. S., Santa Clara, 1930	III Law	San Jose
Green, Fred Hall, Jr.	Soph. Engr.	San Francisco
Green, James Frederick	Fr. Arts	Beverly Hills

Green, Joseph Murray	Sen. Arts	Phoenix, Arizona
Greif, Harold J.	Soph. Sem.	Los Gatos
Haakinson, William Herbert, Jr.	Sen. Science	San Bernardino
Haas, Thomas Martin	Sen. B. A.	San Jose
Hafner, Wallace George	Sen. B. A.	San Jose
Hall, Donald George	Sen. C. E.	Santa Clara
Hamann, Anthony Peter	Jun. Arts, I Law	Orange
Handlery, Raymond Arthur	Fr. Arts	Vallejo
Hardeman, William Stephen	Soph. Engr.	Los Altos
Hargrove, Nelson Edward	Soph. Engr.	San Francisco
Harman, John Henry	Soph. Arts	Fort Bragg
Harney, Paul J.	Fr. Sem.	Los Gatos
Harper, Harold Patrick	Sen. Arts	San Jose
Harrington, William Henry	Soph. Arts	San Francisco
Hart, Brooke L.	Soph. B. A.	San Jose
Hart, Franklin Joseph	Fr. Premed.	Pacific Grove
Harvey, Charles Herbert	Jun. E. E.	San Jose
Harvey, Thomas Norman, Jr.	Soph. Engr.	Bakersfield
Hayes, Robert J.	Soph. Sem.	Los Gatos
Hazel, Harry Charles, Jr.	Jun. Arts, I Law	Seattle, Wash.
Healy, John Timothy	Sen. Arts	Coronado
Heffernan, James Joseph, Jr.	Fr. Premed.	Stockton
Held, Robert Francis	Fr. Arts	Hollister
Hendee, Robert Lee	Fr. Premed.	San Jose
Henebry, William Joseph	Fr. Arts	New Haven, Conn.
Hermens, Julius A.	Soph. Sem.	Los Gatos
Hermes, Richard Manning	Fr. Engr.	San Diego
Hermes, William Henry, Jr.	Soph. Engr.	San Diego
Herron, Ronald J.	Soph. Sem.	Los Gatos
Hersey, George James	Soph. B. A.	Lindsay
Hicks, Harold James	B. A. Spec.	Palm Springs
Higgins, Edward Dennis	Fr. Arts	Venice
Hillebrand, Francis Dennis	Jun. C. E.	Palo Alto
Hinojosa, José Francisco	Fr. Engr.	Los Angeles
Holmes, Ellis Brainard	Fr. Engr.	San Jose
Hopkins, Chandon Page	Fr. Premed.	Gridley
Hosford, Jack Daniel	Fr. Arts	Woodside
Howell, Frank More, Jr.	Jun. C. E.	Los Altos
Hoye, Barty Edward	Fr. Arts	Auburn, Wash.
Huerta, Manuel E.	Sen. C. E.	Guadalajara, Mexico
Hulsman, Lawrence Benedict	Fr. Arts	San Jose
Hunt, Joseph Moody	Fr. Arts	Phoenix, Arizona
Hurley, Jacob P.	Soph. Sem.	Los Gatos
Idiart, John Prosper	Fr. B. A.	Los Banos
Jackman, Robert Victor	Soph. Engr.	San Jose
Jaqua, Norwood E. V.	Sen. Arts	Pasadena
Jauregui, Adolph John	Sen. Arts	Reno, Nevada
Jennings, James Joseph, Jr. B. S., Santa Clara, 1930	III Law	Sacramento
Johns, Delbert William	Fr. B. A.	Oakland
Johnson, Richard Philip	Soph. Premed.	Seattle, Washington
Judnich, Anton Paul	Fr. B. A.	San Francisco

Karam, Nasib N.	Jun. Arts, I Law	Nogales, Arizona
Kaune, Robin William	Fr. Arts	Piedmont
Keenan, Edward J.	Soph. Sem.	Los Gatos
Keenan, Peter Joseph	Fr. Premed.	San Francisco
Keller, Winston Anderson	Jun. Arts	Martinez
Kelly, Joseph Patrick	Fr. Arts	San Francisco
Kelly, Robert O'Neil	Fr. Arts	Phoenix, Arizona
Kenefick, Francis Owen	Sen. M. E.	Galt
Kennedy, James R.	Fr. Sem.	Los Gatos
Kenny, Arthur Hughes B. S., Santa Clara, 1930	III Law	Calistoga
Kenny, Thomas Bertrand	Fr. B. A.	Coronado
Kent, Art Doty	Fr. Arts	Oakland
Kerckhoff, Anton Philip	Sen. Premed.	Covina
Kerwin, Roland Normand	Soph. Arts	Saratoga
Kilkenny, Edward Thomas	Jun. Arts, I Law	Dixon
Kilp, Alfred J.	Fr. Sem.	Los Gatos
Kimball, Milton Samuel	Fr. Arts	San Francisco
Kirby, David Carroll	Sen. Arts, II Law	San Jose
Klatt, Frank Wellington	Sen. Arts	Santa Ana
Knotts, George Ralph	Jun. Arts	Nipomo
Koepf, Ernest Edel	Fr. Arts	San Mateo
Kohlman, Hurley Joseph	Fr. B. A.	Metzger, Oregon
Kovacevic, George Dominic	Sen. C. E.	Berkeley
Kunz, Hugh R.	Soph. Sem.	Los Gatos
L'Abbé, George Albert, Jr.	Soph. Arts	Seattle, Washington
Ladd, Leonard H.	Soph. Arts	Hollister
Lagan, Edward Jeremiah	Jun. Arts	San Francisco
La Hue, Lloyd Coyne	Fr. Premed.	San Jose
Lanza, Joseph James	Jun. Arts, I Law	Tacoma, Wash.
Larrouy, George Pierre Ph. B., Santa Clara, 1929	IV Law	Redwood City
Lawler, Bernard J.	Fr. Arts	El Segundo
Lazane, Anthony Joseph	Fr. Arts	Santa Barbara
Laznibat, Peter Nick	Fr. B. A.	Mountain View
Leahy, Marshall Edmund	Sen. Arts, II Law	San Francisco
Leahy, Sherman Daniel	Sen. Arts, II Law	San Francisco
Ledden, Charles Thomas	Sen. C. E.	San Mateo
Lee, Gerald Dorland	Jun. Arts	Los Angeles
Lee, Martin Michael	Jun. Arts, I Law	San Francisco
Lemoge, Fay Joseph	Jun. E. E.	San Francisco
Lenahan, Joseph E.	Fr. Sem.	Los Gatos
Lentz, Cyril Rudolph	Fr. Engr.	Yakima, Washington
Leonard, William	Jun. Arts	San Luis Obispo
Le Sage, Wilfred J.	Soph. Sem.	Los Gatos
Leslie, Richard Black, Jr.	Fr. Engr.	Los Gatos
Linares, Francis Joseph	Sen. B. A.	Panama City, Panama
Lombardi, James Grimes	Jun. M. E.	Los Angeles
Long, George Louis	Jun. Arts	San Jose
Long, John David	Fr. Premed.	Phoenix, Arizona
Leo, John James	Fr. Engr.	San Jose
Lubin, David Joseph	Fr. Engr.	San Francisco
Lourdeaux, Albert Francis	Jun. Premed.	Sacramento
Lydick, John V., Jr.	Soph. B. A.	Cordova, Alaska
Lynch, John Emmet	Fr. Arts	Butte, Montana

MacDonald, John Alexander	Fr. Engr.	San Jose
Machado, Chris Stanley	Sen. Arts	Salinas
Macneil, Sidney John	Soph. B. A.	Marana, Arizona
Maginnis, Jess Arthur	Fr. Arts	Sunnyvale
Mahan, Leo David	Soph. Arts	Santa Rosa
Mahoney, Frank William	Fr. B. A.	Tulare
Mahoney, John Daniel	Sen. B. A.	San Francisco
Maloney, Edward Bernard	Fr. Premed.	San Leandro
Malovos, Andrew Joseph, Jr.	Sen. B. A.	San Jose
Manfredi, Attilio	Fr. B. A.	Mountain View
Marcucci, John Arthur	Soph. Premed.	Santa Rosa
Marks, David Jess	Sen. Arts, II Law	Bisbee, Arizona
Marquart, Martin E.	Fr. Sem.	Los Gatos
Marsden, Robert Weimar	Soph B. A.	Chicago, Illinois
Martin, Gregory Thomas	Jun. Arts, I Law	Vallejo
Martin, John Albert	Sen. B. A.	San Jose
Martin, John H.	Fr. Sem.	Los Gatos
Martin, Joseph Lawrence	Jun. B. A.	Vallejo
Martinelli, Savino Victor	Sen. Arts	Pasadena
Mattenberger, William Leo	Soph. Arts	San Jose
Mautz, Joseph Lawrence	Fr. B. A.	Los Angeles
May, Harold Leo	Soph. Engr.	Los Angeles
McCarthy, Joseph Francis	Fr. Premed.	Menlo Park
McCoy, Arthur Wesley, Jr.	Fr. B. A.	Alameda
McDonald, Donald G.	Fr. Sem.	Los Gatos
McDonald, George Richard B. S., Santa Clara, 1930	III Law	Mountain View
McDonald, Gerald O.	Soph. Sem.	Los Gatos
McGonigle, James Patrick	Fr. Premed.	Pocatello, Idaho
McGuire, John Joseph	Soph. Arts	Coronado
McKee, Charles J.	Soph. Sem.	Los Gatos
McKenna, Francis John	Jun. M. E.	San Jose
McKenna, Fred W. J.	Fr. Engr.	San Jose
McLaughlin, Jerome Morley	Fr. Arts	Sacramento
McLaughlin, Walter Morley	Sen. Arts, II Law	Sacramento
McMahon, Robert E.	Soph. Sem.	Los Gatos
McMenamin, George Emmet	Fr. Arts	Monterey
McNamee, Charles Francis	Soph. Arts	Hollister
McVeigh, James Patrick	Fr. B. A.	San Francisco
Meherin, William Patrick	Fr. Premed.	San Francisco
Menard, Napoleon Joseph A. B., Santa Clara, 1929	IV Law	San Jose
Merrill, Joseph Anthony	Sen. E. E.	San Francisco
Mettler, Herman Joseph	Sen. C. E.	Redwood City
Michael, Michael Thomas	Fr. Premed.	Stockton
Mignola, August J., Jr.	Sen. B. A.	San Jose
Miller, Paul A.	Sen. Arts	Salinas
Molinari, Charles Paul	Soph. Arts	San Francisco
Monti, Frank D.	Soph. Arts	San Rafael
Mora, Mario Joseph	Fr. Arts	Los Angeles
Morabito, Anthony James	Sen. Arts	San Francisco
Morabito, Carl Salvador	Jun. Arts	San Francisco
Moreno, Victor	Soph. Sem.	Los Gatos
Morey, John Emmet	Special	Menlo Park
Morey, Joseph Philip	Jun. Arts	Menlo Park
Morey, Warren Stephen	Soph. Arts	Menlo Park

Moroney, Thomas Carl	Soph. Arts	San Mateo
Morris, Brougham Joseph	Fr. B. A.	San Francisco
Morris, Fred Joseph	Fr. B. A.	San Francisco
Morrison, William Lancaster	Fr. Premed.	San Mateo
Morrissey, William Hamilton	Soph. Arts	Santa Barbara
Murphy, Daniel Thomas A. B., Santa Clara, 1930	II Law	Santa Clara
Murphy, Sinnott Bernard	Soph. B. A.	Berkeley
Murray, Douglas John	Jun. C. E.	San Francisco
Murray, Jack Francis	Fr. Premed.	Fresno
Murray, Steven Kennedy	Sen. Arts	Esparto
Myer, Glen Anthony	Fr. Arts	Cupertino
Nagle, Gerald J.	Fr. Sem.	Los Gatos
Nasser, Richard G.	Fr. Sem.	Los Gatos
Navarra, Dominic Joseph	Fr. Arts	San Jose
Nelson, William Albert	Jun. Arts	San Luis Obispo
Neuwald, Robert Edward	Fr. Arts	San Francisco
Nicholas, James Joseph	Soph. Arts	San Francisco
Niles, William Elden	Jun. Arts, I Law	San Jose
Nogues, George Bohm	Sen. E. E.	San Jose
Nolan, Joe Robert	Soph. B. A.	Bakersfield
Noonan, Henry Louis	Jun. Arts, I Law	Vallejo
Noriega, Albert Leo	Fr. Arts	Bakersfield
Normandin, Irving Louis	Sen. B. A.	San Jose
Norton, Thomas Warden	Soph. Arts	San Luis Obispo
O'Brien, Charles Maurice, Jr.	Soph. B. A.	San Jose
O'Brien, Gregory	Fr. Sem.	Los Gatos
O'Brien, Jerry M.	Jun. Arts	San Jose
O'Connell, Fenton Franklin	Soph. B. A.	Gilroy
O'Connor, Lawrence Patrick	Sen. C. E.	San Francisco
O'Connor, Thomas Martin	Fr. Arts	San Francisco
O'Daniels, Howard Robert	Sen. B. A.	Seattle, Washington
O'Donnell, Thomas Patrick	Sen. Arts, II Law	Hollister
O'Donnell, Vincent Francis	Fr. B. A.	Los Angeles
O'Farrell, William L.	Fr. Sem.	Los Gatos
O'Keefe, James Thomas, Jr.	Sen. Arts, II Law	Menlo Park
O'Malley, James Charles	Fr. Arts	Phoenix, Arizona
O'Reilly, Francis Fulton	Soph. Arts	San Luis Obispo
O'Rourke, Bernard P.	Fr. Sem.	Los Gatos
O'Shea, Francis Vincent	Soph. Arts	Portland, Oregon
Osmer, John Carlisle	Fr. B. A.	Salinas
Ospina, Eduardo	Fr. Engr.	Cali, Colombia
Oswald, Allen James	Fr. Engr.	Livermore
Pacheco, Carl John	Soph. Arts	Santa Clara
Pagani, John, Jr.	Jun. B. A.	Kenwood
Paganini, Charles Edward	Fr. Arts	San Francisco
Paglia, Joseph Paul	Fr. Arts	Black Diamond, Wash.
Palomares, Vincent Joseph	Soph. B. A.	Los Angeles
Pardini, Elmo William	Soph. Engr.	San Jose
Parente, Frank Joseph	Sen. Arts, II Law	San Francisco
Payson, Stephen Henry	Sen. C. E.	Los Altos
Pecharich, John Phil	Jun. E. E.	Jerome, Arizona
Pecharich, Philip Dominic	Fr. Engr.	Jerome, Arizona
Pegg, Arthur Richard, Jr.	Jun. E. E.	San Pedro

Pera, Louis Anthony	Fr. B. A.	San Jose
Percy, George Dowling	Fr. Premed.	San Francisco
Pereira, Efraim Emilio	Jun. C. E.	Barranquilla, Colombia
Périer, Claude Henry	Fr. Engr.	Los Angeles
Périer, Jacques Edward	Soph. Arts	Los Angeles
Pesco, Ray Saveris	Soph. Arts	Ilwaco, Washington
Peters, Ronald Francis	Sen. Arts, II Law	Danville
Pfister, Lawrence J.	Sen. B. A.	Los Angeles
Pierce, Guy Elsworth	Fr. Engr.	San Francisco
Pike, James Albert	Fr. Arts	Hollywood
Piper, George Paul	Sen. E. E.	Tacoma, Washington
Pisano, Rocci George	Fr. Arts	San Jose
Plover, Bernard Charles	Sen. Arts	Santa Rosa
Polomik, Rudolph Leonard	Fr. Arts	Sunnyvale
Pontoni, Michael Severo Ph. B., Santa Clara, 1929	IV Law	Arcata
Pope, Gerald J.	Soph. Sem.	Los Gatos
Porter, Arza Francis	Jun. C. E.	Arroyo Grande
Porter, Asa Charles	Soph. B. A.	Arroyo Grande
Porter, William Arza	Jun. C. E.	Santa Maria
Powers, Leslie Edwin	Soph. Arts	Los Angeles
Pozzi, Albert Theodore	Fr. B. A.	King City
Prein, Joseph Hermes	Soph. Engr.	Menlo Park
Prendiville, Raymond E.	Fr. Sem.	Los Gatos
Prince, John Frederick	Fr. Premed.	Phoenix, Arizona
Prindiville, Gerald Andrew	Jun. Arts, I Law	San Jose
Pritchard, Bernard Leroy	Fr. Arts	San Jose
Puccinelli, Alexander	Soph. Arts	Elko, Nevada
Puccinelli, Hector Philip	Sen. C. E.	San Francisco
Raber, Howard E.	Soph. Sem.	Los Gatos
Raspo, Frank Joseph	Soph. Arts	Banta
Ratto, Gervaise Jerome	Soph. Arts	Burlingame
Ravizza, Richard Joseph	Fr. Premed.	Cupertino
Reed, George Dugan	Sen. Arts, II Law	Petaluma
Reed, Roland A.	Fr. Sem.	Los Gatos
Reger, Charles G.	Fr. Sem.	Los Gatos
Reiter, Joseph Miles	Jun. Arts	San Jose
Regan, William Valentine, Jr.	Soph. B. A.	Boise, Idaho
Rhodes, Bert Daniel	Soph. Arts	Atwater
Richards, Robert Henry, Jr.	Fr. Arts	Bishop
Riordan, Robert Emmett	Fr. Engr.	Jerome, Arizona
Roach, Charles Kenneth	Jun. Arts	Oakland
Robinson, John A.	Fr. Sem.	Los Gatos
Rogers, James Patrick, Jr.	Fr. Arts	San Francisco
Roll, John Robert	Jun. E. E.	San Jose
Ronstadt, Alfred	Sen. Arts, II Law	Tucson, Arizona
Rooney, George M. G.	Soph. B. A.	Sacramento
Rossiter, Vincent Lawrence	Fr. Premed.	Orange
Rosswog, Karl Michael	Fr. B. A.	Cordova, Alaska
Rothwell, Weber Daniel	Soph. Engr.	Sacramento
Rowland, Alessandro Thomas	Sen. Arts	Los Angeles
Ruettgers, Francis Henry	Sen. B. A.	Wasco
Ruffo, Albert John	Sen. E. E.	Tacoma, Washington
Ruiz, José Blas	Sen. E. E.	Santa Clara
Russell, Donald Albert	Sen. B. A.	Pond

Russell, Joseph Henry	Soph. Engr.	Pond
Ryan, Patrick James	Soph. Arts	Creston
Ryan, Robert Emmett	Fr. Engr.	San Jose
Rynne, David William	Fr. Arts	New Haven, Connecticut
Saba, José	Jun. Premed.	Nogales, Arizona
St. Marie, Louis H.	Fr. Sem.	Los Gatos
Sanfilippo, Salvadore M., Jr. B. S. Santa Clara, 1930	III Law	San Jose
Santana, Fred Robert A. B., Santa Clara, 1930	III Law	San Jose
Santoni, Mathew Octavius	Sen. B. A.	Woodland
Savio, Aldo Philip	Jun. C. E.	San Jose
Schelcher, George Joseph, Jr.	Jun. Arts	Sacramento
Schies, Clarence Emmett	Sen. B. A.	San Bernardino
Schmidt, Carl J.	Fr. Sem.	Los Gatos
Schmidt, Henry Frank	Sen. Arts	San Jose
Schnerr, Edward Thomas	Fr. B. A.	Los Gatos
Schutzer, Walter Livingston	Fr. Arts	San Francisco
Scoppettone, James Joseph	Sen. Arts, II Law	San Jose
Scott, Walter Kane	Soph. Arts	San Jose
Segretti, Sisti Joseph Ph. B., Santa Clara, 1929	IV Law	Salinas
Seibert, Leo Anthony, Jr.	Fr. B. A.	Los Angeles
Seufert, Theodore Joseph, III	Fr. B. A.	Redwood City
Shea, Joseph Mehlbaum	Jun. C. E.	Anaheim
Sheehy, John Edward	Fr. Engr.	Watsonville
Sheehy, Philip George, Jr.	Fr. Engr.	San Jose
Sheridan, Ralph John	Jun. E. E.	San Francisco
Sherman, Eugene Joseph	Soph. Arts	Livermore
Silva, Anthony Joaquin, Jr.	Fr. B. A.	Agnew
Silva, William Russell	Fr. Engr.	Petaluma
Simoneau, Frederick E.	Fr. Sem.	Los Gatos
Singewald, George Laurence	Sen. B. A.	Atherton
Slavich, Francis Luke	Soph. Arts	San Francisco
Smith, Jack Mathew	Soph. Arts	San Francisco
Soldate, Lauren Frederick	Jun. Arts	Petaluma
Somers, John Thomas	Fr. Engr.	San Jose
Spaich, Milos Gus	Fr. B. A.	Saratoga
Sparolini, Francis Joseph	Fr. B. A.	Monterey
Sparolini, John Anthony	Soph. Engr.	Monterey
Spencer, Masten Leroy	Soph. Arts	Patterson
Spieler, Frederick J.	Soph. Sem.	Los Gatos
Spotswood, Russell Elmer	Jun. Arts	Pacific Grove
Sprague, Raymond R.	Fr. Sem.	Los Gatos
Starke, Edwin Temple	Soph. Engr.	San Diego
Steffani, Edward Cahalan	Sen. M. E.	Saratoga
Stenger, George Henry	Sen. E. E.	Cowell
Stephens, John Andreson	Fr. Premed	Rialto
Stepovich, George James	Soph. Arts	San Jose
Steward, Lewis Brooks, Jr.	Fr. Engr.	Santa Clara
Stockton, Robert Lynn	Jun. B. A.	Bakersfield
Storm, Edward Charles	Soph. Arts	Salinas
Strong, Ned Bennington, Jr.	Soph. B. A.	Watsonville
Stuart, James Lavaille, Jr.	Jun. C. E.	San Diego
Sullivan, George Gale	Soph. Engr.	Santa Clara

Sullivan, Harry Ignatius	Sen. Arts, II Law	Burlingame
Sullivan, John Desmond	Fr. B. A.	Menlo Park
Sullivan, John Ruger	IV Law Spec.	San Jose
Sullivan, Joseph Jerry	Soph. Premed.	Eureka
Talbott, Raymond L.	Soph. Sem.	Los Gatos
Tassi, Albert Anthony	Sen. Arts	Burlingame
Taylor, John H.	Soph. Sem.	Los Gatos
Theller, William Wallace	Sen. Arts, II Law	Sunnyvale
Thissen, Eugene Renier	Fr. Arts	Boise, Idaho
Thomas, Frank Henry	Soph. Arts	San Diego
Thomas, Joseph Weldon	Sen. Science	San Diego
Thomas, Vincent Anthony	Jun. Arts	San Pedro
Thorpe, Lionel Waldo	Jun. E. E.	Sunnyvale
Thorup, Chris M.	Soph. Arts	Salinas
Thrift, Edgar Milton A. B., Santa Clara, 1930	III Law	San Jose
Thrift, Richard Gibson	Fr. Arts	San Jose
Tognazzini, Elmer Raymond	Sen. B. A.	San Luis Obispo
Tollini, Mario John	Sen. Arts	San Francisco
Toohey, Charles Patrick	Soph. B. A.	Lindsay
Toohey, Constant Cornelius	Jun. B. A.	Lindsay
Torelli, Paul Joseph B. S., Santa Clara, 1928	IV Law	Santa Clara
Tosi, Vincent Joseph	Fr. Engr.	San Francisco
Tucker, James Hawley	Fr. Arts	Boise, Idaho
Tuite, Thomas Joseph	Jun. Arts, I Law	Redwood City
Turner, James Talton	Soph Arts	San Francisco
Twohy, James Francis, Jr.	Jun. Arts	Portland, Oregon
Uberuaga, Joseph Henry, Jr.	Soph. B. A.	Boise, Idaho
Uroff, Ben Alexander	Special	San Francisco
Valente, Alfred Joseph	Soph. Arts	San Jose
Vázquez, Manuel I.	Jun. C. E.	San Jose, Costa Rica
Villegas, Joseph Clayton	Jun. B. A.	San Fernando
Von Tobel, Edward John	Fr. B. A.	Las Vegas, Nevada
Von Tobel, Jacob Edward	Jun. B. A.	Las Vegas, Nevada
Vredenburg, Paul Lawrence	Sen. C. E.	Santa Clara
Wade, Reginald Thomas	Soph. Arts	Benicia
Wagner, John Otto	Soph. Engr.	Santa Barbara
Wagner, William Francis	Jun. Science	San Francisco
Wallace, John Anthony	Jun. E. E.	Modesto
Walsh, Joseph Roy	Sen. Arts	San Jose
Walsh, Walter Thomas	Fr. Engr.	Redwood City
Wanger, Alfred Leo	Sen. Arts, I Law	Vallejo
Want, Walter L.	Soph. Sem.	Los Gatos
Warren, William Joseph	Sen. E. E.	Arcata
Werts, C. Francis	Soph. Sem.	Los Gatos
White, James Raymond, Jr.	Fr. B. A.	Los Angeles
Whitmore, James Ping	Soph. Engr.	Santa Clara
Whitwam, Charles William	Fr. Engr.	Los Altos
Wienholz, Arthur Nicholas	Fr. Arts	San Francisco
Wiesinger, Warren Edward	Fr. Premed.	San Francisco
Wilcox, Charles Francis	Soph. Arts	Santa Clara

Wilhelm, Mathias I.	Soph. Sem.	Los Gatos
Wilkinson, Joseph Kerr	Jun. B. A.	Pomona
Williams, Neal Cataruzi	Fr. Premed.	Santa Clara
Williams, Sidney Frank	Fr. B. A.	Santa Monica
Wilson, William James, Jr.	Soph. Engr.	Menlo Park
Winship, John Bruce	Soph. B. A.	San Mateo
Wirtz, Cable Ambrose	Jun. Arts	Honolulu, Hawaii
Wright, Malcolm Dunning	Fr. B. A.	Los Angeles
Zapp, Carl Philip	Jun. Arts	Hoquiam, Washington
Zupo, James Harper	Fr. Arts	Vacaville
Zuur, John William	Fr. B. A.	Santa Rosa
Zuur, Lawrence William	Fr. B. A.	Santa Rosa